

THE IRON AGE

THURSDAY, APRIL 19, 1888.

New Double Pitman Press.

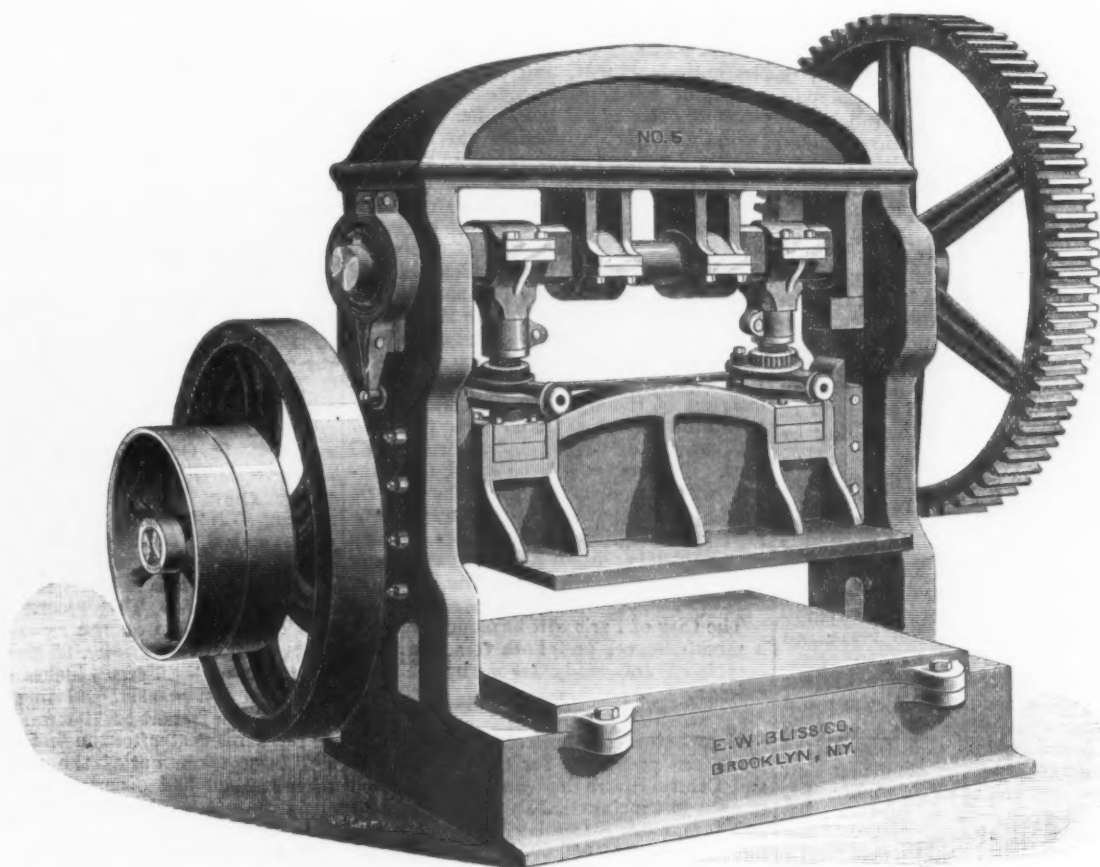
We show on this page a new double pitman press, built by the E. W. Bliss Company, of Brooklyn, N. Y., for heavy cutting, forming and perforating in the sheet-metal line. The presses are used in the manufacture of gasoline stove tops from sheet steel, in forming panels and moldings for ceilings from sheet iron or steel, for punching single or double rows of holes in sheets of iron for kitchen boilers, tanks, &c., and for other work of similar character. The press frame is a single casting, the width between the uprights as ordinarily used being 54 inches, and when intended for punching holes in

back and forth, both screws work alike in raising or lowering the crosshead, which is thus always kept perfectly true. The adjustment can, in this way, be made in a fraction of the time required when the two pitmen are moved independently. The large gear-wheel on the crank shaft is 5 feet in diameter by 6 inches face, and is driven by a pinion on the end of the back shaft, which runs in bearings bolted on the back of the press frame, the proportion of gears being $7\frac{1}{2}$ to 1. Upon the other end of the back shaft is mounted the balance-wheel, 45 inches in diameter by 6 inches width of face and weighing 900 pounds; also the tight and loose driving pulleys, 24 inches in diameter by 6 inches

Chilian proposals are tempting. Labor is abundant and cheap, and the Chilian peon is, and has been for years, ever since Henry Meiggs discovered his admirable qualities, the great factor in all contracts for railroad building in Spanish America. The stability of the government, its exceptional financial status, the energetic character of the people, offer inducements to our contractors and capitalists.

The New Inman Line Steamers.

Of the new Inman Line steamers City of New York and City of Paris, the former of which was launched last month, *Engineer-*



NEW DOUBLE PITMAN PRESS, BUILT BY THE E. W. BLISS COMPANY, BROOKLYN, N. Y.

long strips of iron openings are cored in the upright portion of the frame so that long strips may be passed through from right to left. The crosshead slides in V-shaped bearings, made adjustable to take up wear, and receives its motion from cranks turned on the forged steel shaft (which is $4\frac{1}{2}$ inches in diameter) through two pitmen, the lower ends of which work in sockets attached to the top of the cross head, as shown in the cut, for ball and socket joints. The pitmen are made adjustable, the lower portions being threaded to suit corresponding threads in the upper portions, and the latter, being split and provided with binding screws, securely fasten the pitmen when properly adjusted. The lower portions of the pitmen each have a ratchet device, and are connected in such manner that when a bar is inserted in the socket on either of them, and moved

width of face. The back shaft and large gear-wheel may be run continuously, and the clutch connecting the gear to the crank shaft thrown in at will by depressing the treadle, not shown in cut. Three slots are cut in the hub of the gear so that the lost time can never exceed one-third of a revolution after depressing the treadle before the clutch engages the gear and communicates motion to the crosshead. When desired, the press is set on short, heavy frame legs, but for some classes of work this is not desirable.

The Government of Chili, through the Chilian Legation in Washington and its Consul General in this city, calls for proposals for the construction of over 700 miles of railway in that prosperous and progressive republic. For contractors who may not have work at home the

ing, of London, supplies the following particulars:

The vessels are the largest passenger-carrying steamers in the world, having the following dimensions:

Length on load water line.....	525 feet.
Length over all.....	560 "
Breadth.....	63 $\frac{1}{4}$ "
Depth molded.....	42 "
Tonnage (gross).....	10,500 tons.

The keel of the City of New York was laid in June last, and that of the companion ship, the City of Paris, shortly afterward. The vessels are constructed of steel made at the works of the Steel Company of Scotland, Newtown and Blochairn, and at the Mossend Steel Company's Works. The material placed in position, when the ships were almost ready for launching, weighed, for each vessel, 7000 tons, the heaviest casting for each ship being the

sternpost, of 26 tons. The heaviest casting for the engines weighs 50 tons. The hull of each vessel is divided by transverse bulkheads into 15 water-tight compartments, including three for boilers and two for machinery, the latter being separated by a longitudinal bulkhead. The doors in the bulkheads are on the upper deck far above the load water-line, it being determined not to trust to the doors being promptly shut in cases of danger. None of the compartments exceed 35 feet in length, and the quantity of water they hold to load water-line is 1250 tons, or to upper deck 2250 tons. Even were two or three filled, the flotation of the vessel would not be placed in danger, and her buoyancy could easily be trimmed. As an additional precaution, the vessel has two bottoms, the space between them being 4 feet. They serve a double purpose, for not only will the existence of an inner bottom insure that no part of the ship will be flooded by a fracture of the external bottom, but the space can be utilized for carrying water ballast to the extent of 1600 tons for adding to the stability or altering the trim of the ship.

One other noteworthy principle of the internal arrangements of the vessels may be mentioned. Their dimensions, fortunately, are not likely to cause them to roll badly, as do some other large Atlantic steamers; but to provide for the possibilities of occasionally meeting seas which may make them roll they will each be provided with a rolling chamber. The partial filling enables the water to move about freely, and when the dimensions of this chamber and its form are properly selected the motion of the water can be made to counteract the motion of the ship when rolling. The constructors have, after a long series of experiments, both on models and in actual Atlantic work, arrived at a form of chamber which will reduce the rolling by at least one-half.

The vessels have each five decks. The total number of square feet on each deck is 27,000, so that, including the bottom of the hold, the vessels have each a flooring of over 150,000 square feet. The deck next to the hold, called the orlop deck, will be, with the spaces below, devoted to cargo carrying. The next two—the lower and main decks—are devoted to passengers, the first-class being accommodated in the center and the second-class forward and aft. The principal saloon is on the main deck, and forms a principal feature in the internal arrangements. A condition laid down in the contract, as already indicated, was that the vessels were to partake more of the arrangement of large first-class hotels than of steamers. Eight feet is the usual space between two decks, and even the most skillful architect would find it difficult, if not impossible, to produce a saloon commensurate, either in size or artistic treatment, with the proportions and general design of such large vessels. Messrs. Thomson, however, solved this problem in the National liner America, and as the experiment in her case was most successful in every way, they have repeated the same arrangement greatly improved, making the roof of the saloon in the form of a large dome or arch. In the case of the new Inman liners three decks have been taken into the height of the saloon, the dome of which is level with the top of the houses on the upper deck, thus giving a height of 22 feet. The dome is 53 feet long and 25 feet wide. It is supported by heavy steel stanchions, the arch itself being formed of strong yet light framework of steel, to be covered with ornamented wood, and the spaces are filled in with beautifully designed stained glass 1½ inches thick, which will be quite capable of withstanding the North Atlantic blasts.

The machinery consists in each vessel of two sets of engines of the three-crank

triple-expansion type, having piston-valves throughout. Each set of the engines is capable of exerting sufficient power to propel the vessel at four-fifths of her maximum speed, so that should one set break down no serious delay will take place, for the vessel will go at a speed, say, of 16 knots instead of 19 knots per hour. In the engines steel castings have been freely used in place of cast iron, and ample bearing surfaces have been provided for high-speed running. The machinery is placed between two transverse water-tight bulkheads, and a water-tight partition running longitudinally divides the engines—the port from the starboard. The boilers from which steam is supplied are similarly safeguarded. They are fitted in three separate water-tight spaces, divided by transverse bulkheads. The auxiliary engines of each of the vessels number 37, the majority of which are driven by hydraulic power. For hoisting the cargo in and out of the vessels hydraulic machinery is supplied.

There are nine cargo holds, some of which have two hoists to lift cargo from the hold and swing it over the side noiselessly. The rattle of steam winches will be entirely absent, and those who have slept, or tried to sleep, on board of a steamer the night before her departure will thoroughly appreciate this change. Hoists for many other purposes are fitted in the vessels, such as lifting the food from the galleys to the pantries, the stores from the storeroom to the galleys, the engineers and firemen from the bottom of the vessel to the different levels on which they are to work, and the ashes are also hoisted from the boiler-rooms to the main deck and put through a tube to the sea without any noise. In all there are ten hydraulic hoists and 12 hydraulic derricks. The steering of the vessels is also effected by hydraulic power, actuated by a powerful ram capable of developing a thrust of 80 tons. The vessels will be fitted throughout with an installation of the electric light. More than 1000 incandescent lamps have been supplied to each. The machinery is completely duplicated, so that any breakdown will not place the ships in darkness.

The City of Paris will be launched about a month hence, and both vessels will be completed and ready for sea by the early autumn.

Manufacturers and merchants in Western cities are preparing for the Ohio Valley and Central States Centennial Exhibition, to open in Cincinnati, July 4, and continue 100 days, closing October 27. The magnificent sum of \$1,000,000 has been pledged as a guarantee fund by the citizens of Cincinnati. Eleven States are officially connected with its management. Ninesquares in the heart of the city will be covered by buildings, now nearing completion. The main building, cruciform in shape, is 600 feet long by 400 feet wide. The Park Building, covering a miniature lake, is 600 feet long by 110 feet wide, surmounted by a tower 136 feet high. Power Hall is 1247 feet long and 112 feet wide, with the Miami and Erie Canal running through the center. Over 3,000,000 feet of lumber, 30 carloads of glass and many tons of iron will be consumed in construction. The entire floor space will be about 23 acres. The local interest in the great enterprise among Cincinnati people is strong.

Compound plates for armored ships, it is claimed in England, are superior to any other. The Sheffield *Telegraph* refers to the recent trial of plates and projectiles at Portsmouth as vindicating its preference for the compound system, as against the all-steel French plates. Many prominent English manufacturers are sending plates, some compound and others of solid steel,

for further experiment. All the plates are to be 10½ inches thick and to measure 8 feet by 6 feet. Briefly summed up, the *Telegraph* says: "Cammell's plate, which was one of the first to be tested, resisted the Palliser projectiles most effectively, the hard metal splashing against its face like so many leaden balls. The Holtzer forged steel shots, though they entered the plates to the depth of about 5 inches, could not get through it, and the third Holtzer shot, after penetrating about the same depth, fell upon the deck in a shapeless mass." The *Times's* engineering reporter closes by saying: "The target appeared as if pitted with small-pox, but, with the exception of some small cracks, which appeared to stop short at the weld, no damage was done. There was no lamination. Thus far the success achieved by compound armor has been of a very remarkable kind, and the officers present expressed their surprise and gratification at the result."

Novel Experiment with Leather Belts.

One of our English exchanges illustrates an arrangement of working two large leather belts, one on top of the other, which has been found to answer very satisfactorily. The particulars are as follows:

In the year 1880 the works where the arrangement is applied put in a double leather belt 135 feet long and 36 inches wide, made on their system, without cross joints, and of even thickness throughout, to transmit 350 indicated horse-power. The engine was a single Corliss, horizontal, with fly-wheel drum 24 feet diameter, 39 inches wide, running 48 revolutions per minute, the driven pulley being 8 feet 6 inches diameter. In consequence of extension of the works more power was required. The engine was therefore compounded, in October, 1887, and it was arranged to transmit 350 indicated horse-power more, through another line of shafting. Not having space for another drum, and the fly-drum and shaft being strong enough for the purpose, it was decided to run a second belt under the one already at work. This second belt was also double, made on the same principle as the first, 104 feet long, 38 inches wide, driving a pulley 6 feet 6 inches diameter. This addition was started in November last and the report of the proprietors is said to show that after the first stretching had been taken out of the new belt no other change had occurred and that the old belt was working perfectly straight upon it, with complete success.

These results were not quite anticipated, as, from the novelty of the application, the makers were rather dubious that cross strains might be set up by slipping of the lower belt from the additional drag placed upon it. In the result, however, the experiment has proved a complete success. The principle may be very readily applied where more power is wanted without additional pulleys.

Among the many grandiose ideas transmitted to Russia by Peter the Great was one, conceived during his conquest of the Caspian littoral from Persia, of diverting the river Oxus afresh into that sea. During the last 20 years the Russian Government has repeatedly revived the project, and for seven years after the conquest of Khiva employed a surveying party in taking levels in various parts of the Transcaspian desert. More recently, since the construction of the Transcaspian Railway to the Oxus, the country between Merv and that river has been surveyed, and now the Russian Government has sanctioned the expenditure of 35,000 roubles, or about \$17,500, in drawing up a complete scientific report on the subject.

Improved Curtis Damper Regulator.

The Curtis Regulator Company, of Boston, Mass., are now turning out an improved form of their damper regulator. The engravings which we give on this page will explain the new features.

Steam is brought in a $\frac{1}{4}$ -inch pipe from the boiler to the chamber surrounding the valve E. This pressure is also carried through the side pipe A to the diaphragm. By turning down on the handle H the spring S is compressed, loading the diaphragm with any given weight, thus holding the valve E to its seat. When the boiler pressure in the valve chamber rises high enough to lift this load the valve opens, say, $\frac{1}{16}$ inch, admitting the steam to the top of the piston P, pushing it down to the bottom of its stroke, over-

while very sensitive, is particularly valuable in places where dirt, ashes, &c., are likely to clog the operation of ordinary mechanical devices. Taking the steam from the boiler at full pressure, all the power necessary to move the damper under all practical difficulties is available. While so much power is not necessary in the well-kept boiler room, there are many steam boilers that need powerful regulators, as where the dampers become rusted and clogged with dirt. The regulator, it is claimed, can be made to open and close the damper with a variation of boiler pressure of less than 1 pound.

Proposed British Boiler Legislation.

The leading provisions of a bill, entitled "The Engines and Boilers act, 1888,"

termine regulations as to examinations, qualifications necessary, fees, &c. 5. Also power to suspend, cancel or reissue certificates. 6. Penalty of £100 on examiner receiving fees from applicants. Any person forging a certificate, or altering or procuring the same, is liable to imprisonment, with or without hard labor, for a period not exceeding 12 months. For fraudulently using a certificate a penalty is imposed from £10 to £100.

An equity suit, involving a claim of several hundred thousand dollars, was argued recently at Philadelphia before Judges Allison and Biddle. It is the suit of Samuel Huston against E. W. Clark, William Sellers and John Sellers, Jr., and concerned the Midvale Steel Company, at Nicetown. The case was before the Court on exceptions to the report of the master, ex-Judge Briggs, who decided in favor of Mr. Huston. The William Butcher Steel Works were organized in 1867, but the corporate name was afterward changed, in 1872, to the Midvale Steel Works, and it was thus continued down to the fall of 1880, when the Midvale Steel Works was sold out by the Sheriff under foreclosure proceedings. The property was bought in by William Sellers and a new company was organized, bearing the title of the Midvale Steel Company. The present litigation, however, concerns an agreement entered into between the parties and bearing date May 13, 1873. On January 10, 1870, Mr. Huston was elected president of the William Butcher Steel Works, and he continued in that office until May 10, 1873, when he was succeeded by William Sellers as president, the company, as already stated, having changed its name to the Midvale Steel Works. Mr. Huston, between 1868 and 1873, advanced in cash for the benefit of the company over \$300,000. Then there was a settlement, by which he received stocks and bonds of the company for the advances, and subsequent to this, on May 13, 1873, came the agreement which is the governing factor in the present litigation. Under this agreement Mr. Huston handed his securities to the defendants, and it is the value of these which he says went into the new company that he seeks to recover. When the defendants became the purchasers of the works in the sale of 1880 they purchased the property, the plaintiff contends, for his behalf as well, and he is therefore entitled to share in the new corporation, which is doing a prosperous business. The master sustained this contention. The answer of the defendants is, in brief, that all the securities they received from Mr. Huston under the agreement of May 13, 1873, have been fully accounted for, and as the plaintiff contributed nothing to the new company he is entitled to no interest whatever in that concern.

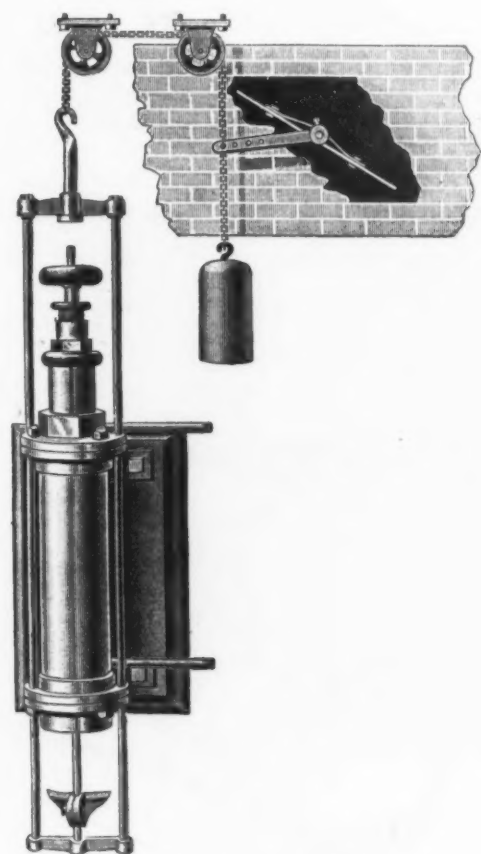


Fig. 1.—General View.

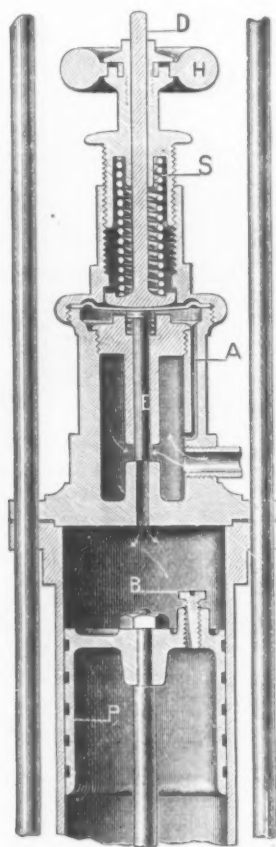


Fig. 2.—Vertical Section.

IMPROVED DAMPER REGULATOR, MADE BY THE CURTIS REGULATOR COMPANY, BOSTON, MASS.

hauling the chain and closing the damper. The improvement consists in extending the stem D of the follower (which rests on the phosphor bronze diaphragm) up through the handle to such a length that the yoke rests on it when the damper is sufficiently closed, thus forcing the valve E to its seat, and cutting off the flow of steam into the piston chamber. The piston starting back relieves the pressure on the spindle D, permitting the valve E to open again, providing just the needful pressure in the cylinder to hold the damper closed until the boiler pressure falling, say, $\frac{1}{4}$ pound, has no longer power to open the valve, and the weight opens the damper. The condensation in the chamber over the piston passes through the adjusting screw B, being carried away by a small drip-pipe into the ash-pit.

Another improvement consists in making the piston P quite long, a loose fit, and putting in water grooves, which make a tight water packing to a perfectly free piston. It is claimed that this arrangement,

recently brought before the British Parliament, are: 1. Every engine or boiler in the United Kingdom must be placed and kept under the supervision of an attendant holding a certificate of qualification under the act; the number of engines or boilers under one attendant to be prescribed. 2. Every user shall keep a register containing particulars of every engine or boiler owned, name of attendant, and other information, to be produced for the inspection of any examiner under the act, factory inspector, court, or person nominated by the Board of Trade. The penalty for default of any part of provisions I. and II. is not to exceed £50. 3. Certificates of qualification (a) will be granted to persons passing examinations provided by this act, and (b) to persons who have had charge of an engine or boiler two years previous to the 1st inst. A certificate obtained from the Board of Trade under the Merchant Shipping acts will be recognized as satisfactory. 4. The Board of Trade will have power to appoint and remove examiners, fix districts, de-

At a recent meeting of the British Institution of Naval Architects Mr. A. F. Yarrow read a paper setting forth the possible advantage of using highly volatile liquids in place of water for the purpose of propulsion. In it he described a 36-foot launch tried in England propelled by a highly volatile hydrocarbon, and which in respect to principle and design appears to be identical with the naphtha launch first brought to public notice in *The Iron Age* of June 30, 1887. This launch, it may be remembered, is built in New York, and according to all accounts is meeting with general favor.

The Van Rysselberghe system of simultaneous telegraphy and telephony has been tried between Brussels and Paris by means of a double phosphor-bronze wire, and the system proved satisfactory. It is to be opened for public traffic.

Economy in Copper Consumption.

In an exhaustive article the London *Statist* presents facts of more than ordinary interest to producers and consumers of ingot copper at the present time. The endeavor of the writer is to afford an approximate idea how and where the consumption of the metal is liable to be diminished by the comparatively high prices established by the unprecedented speculative movement. A simple mathematical calculation is brought out showing that the general idea of the extent to which copper has entered into telegraphy, consequent upon the cheapness of the metal during 1886 and 1887, is subject to considerable modification. One hundred feet of copper wire $\frac{1}{8}$ inch thick weigh $4\frac{1}{2}$ pounds, making 260 pounds required to lay a mile. Wire $\frac{1}{4}$ inch thick weigh $1\frac{1}{2}$ pounds per 100 feet, and 65 pounds of it would lay a mile. A distance equal to 3600 miles could be spanned with wire weighing only 180 tons of copper. From this it may be readily perceived that a vast increase in electric lighting, telephone and telegraphic wires will be necessary to increase the consumption of copper to any remarkable extent. In marine engine building, the writer calculates, $1\frac{1}{2}$ cwt. of copper per nominal horse-power is required for the machinery of a steamship. On this basis a 500 horse-power would require 32 tons of copper. In 1885, with copper comparatively cheap, about 3500 tons were used. Since then the use of copper has been diminished, and it is now down to a minimum, steel having been largely substituted. On locomotive engines costing £2200 and £3000 it is calculated about $6\frac{1}{2}$ tons of copper are used. This quantity can be reduced by the substitution of steel fire-boxes and stays in other countries to the extent that it has been in this country, by boiler tubes of steel and brass combined, whereby about $3\frac{1}{2}$ tons of copper to each engine is displaced, and in minor parts also. In all, it is reckoned $4\frac{1}{2}$ of the $6\frac{1}{2}$ tons now used in and on a locomotive can be displaced by steel and iron. Brass furniture, fittings, &c., require a large amount of copper, but that the advance in the price of the metal would affect the consumption is doubtful. The high cost of the crude material may restrict its use for a time, particularly in view of the forces that are responsible for the enhanced value; but, considering the fact that labor is a larger item of cost than is crude material in the many small articles used, the consumption would doubtless be affected in a small degree only, if at all. The *Statist* article concludes as follows: "We have shown in the remarks under the head of 'Locomotive Engines,' that tubes can be made of steel and coated with copper. It does not require much ingenuity to produce household fittings prepared in the same way. 'All is not gold that glitters,' and such articles as chandeliers may consist of iron or steel tubes coated with copper. The extension of this practice will become more general to household fittings; the appearance of door handles, taps, bolts, &c., will remain as before; their utility will be unimpaired, and the retail price will be even cheaper than heretofore, while a vastly less amount of copper will be used. It is therefore in the construction of locomotives and the brassware in general use that economies in the consumption of the high-priced metal are likely to be found most practicable."

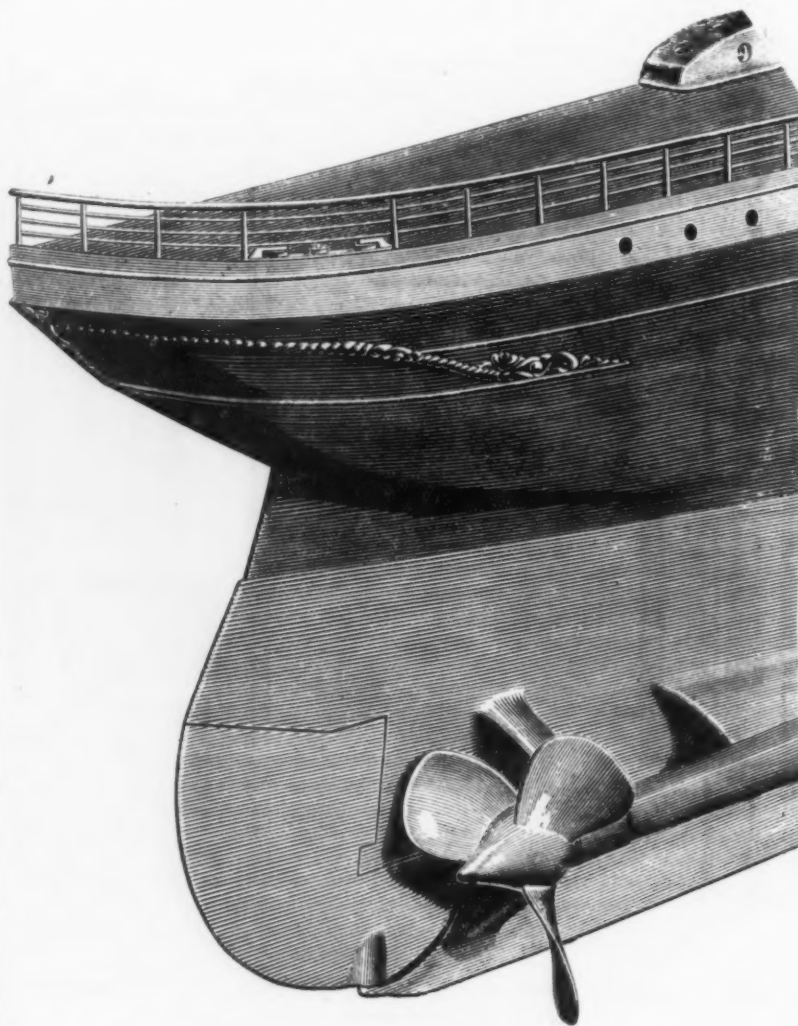
It is reported that there is a strong probability that the charcoal furnace at Florence, Miss., will be rebuilt and started up in a short time. R. M. Cherrie has been looking over the ground for Chicago capitalists who are on the point of organizing a company to purchase the furnace. The

difficulty of securing hardwood for making charcoal is the only serious obstacle in the way of the furnace starting up again, and this trouble will not exist when the "Soo" Railroad builds a branch to Florence, for the proposed extension runs through a fine hardwood country.

Rudder of the Steamer City of New York.

One of the features of interest of the new Inman Line steamer *City of New York*, which was launched by Messrs. J. & G. Thomson, of Glasgow, last month, is the rudder. This is of a novel description recently patented by Messrs. Thomson and

rams, which are placed one on each side of an ordinary tiller. The plungers of these rams work in a direction at right angles to the tiller, and are connected to a sliding block which can slide backward and forward upon the arm of the tiller. Thus while the rams have a simple reciprocating motion the tiller has a corresponding angular motion, which is transmitted to the rudder by a massive connecting-rod connected by a simple pin joint to a short tiller on the rudder head. In designing the steering arrangement for the vessel it has been considered desirable to make it thoroughly efficient for war purposes in the event of the ship being used as an armed cruiser, a condition which is not by any means ful-



RUDDER OF THE STEAMER CITY OF NEW YORK.

Biles—Mr. James R. Thomson, senior partner of the firm, and Mr. J. H. Biles, general manager. It has been specially designed, in the first place, for use in warships, where it is a most vital consideration to keep the whole of the steering gear below the water. We illustrate the arrangement on this page, the engraving being reproduced from *Engineering*, London. It is a structure built up of steel plates and angle bars, and of sufficient strength to resist the exceptionally heavy strains that will come upon it on account of its large area of 250 square feet, a surface greater than has yet been adopted even in ships of war. The strains upon the rudder and steering gear will, however, be greatly reduced on account of a part of the surface being on the forward side of the axis of the pintles. The machinery for turning this rudder is on the hydraulic principle introduced by Mr. A. Betts Brown, Edinburgh, and consists essentially of two hydraulic

filled by the steering gear fitted to ordinary merchant steamers. The gear is powerful enough to put the rudder hard over when the ship is going full speed ahead, each hydraulic ram being capable of exerting a thrust of 80 tons, which is increased by the nature of the mechanism to 140 tons on the connecting-rod mentioned above, which is a shaft of steel 12 inches in diameter. The hydraulic pressure by which the rams are actuated is taken from the pressure mains, which extend to the different parts of the ship, and the valves which admit pressure to one or other of the two rams are controlled by the quartermaster on the bridge by the motion of a small tiller, which takes the place of the usual wheel, and is said to admit of greater accuracy in keeping a given course. The position of the rudder is indicated on the bridge by a simple arrangement.

The *City of New York* and her companion, the *City of Paris*, are to be propelled

by twin screws. Twin screws have been adopted for warships and in several merchantmen; but, strange to say, none of the first-class Atlantic liners have double propellers. It must, therefore, be placed to the credit of the Inman Company that they have been the first to adopt both the single and the twin screws in the Atlantic trade. The propellers are supported by two massive steel stays, each of which is a casting of steel weighing 26 tons, and made by the Steel Company of Scotland.

Improved Dado Machine.

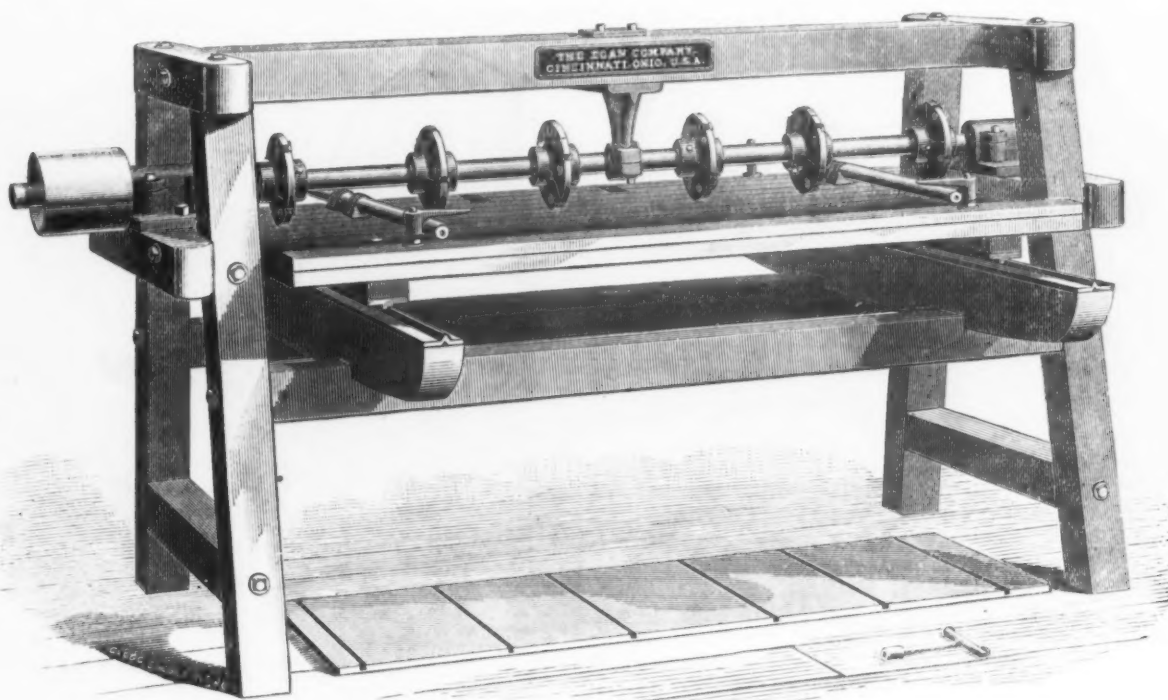
The Egan Company, of Cincinnati, Ohio, are building a new dado machine, shown in the accompanying engraving. It is designed for use in planing mills and box factories, and wherever it is desired to cut one or two dados at one time. The mandrel is made of steel, is very large in di-

Underbilling and Fraudulent Invoices.

The latest phase of difficulties constantly arising in the transportation of freight is alleged underbilling and fraudulent invoices, which is an offense charged against shippers, and the practice has become so general as to have engaged the attention of the Interstate Commission for some time past. Chairman Cooley, of the commission, is quoted as authority for the statement that honest trade has suffered more from this source than from the iniquitous system of rebates, drawbacks, &c., practiced by railroad corporations, and that possibly an amendment to the law which shall provide penalties against shippers and railroads alike is demanded. The establishment of weighing and inspection bureaus is calculated to abate this evil, but a definite

tion, the *Philadelphia Press* says: "The East-bound shipments of the Chicago trunk lines are not $\frac{1}{4}$ of 1 per cent. of the entire freight shipments of the United States, and in 1887 the cases of false billing corrected reached 75,648, and the average for the last five years has been 67,068. This takes no account of the cases of false billing not detected. Extending this showing for a minute fraction of freighting over the country makes some 26,800,000 'errors' in billing freight, four-fifths of them trade lies made to secure a lower rate than honest competitors enjoy. This is an average of one under-billing to every 18 tons of freight, the great majority of which are never discovered and each of which gives the shipper making these profitable 'errors' an advantage over the honest shipper who marks and bills his goods for exactly what they are."

The commission, by shifting the field of inquiry from railroad corporations to indi-



DADO MACHINE, BUILT BY THE EGAN COMPANY, CINCINNATI, OHIO.

ameter and runs in three self-oiling boxes. The center box is adjustable and is provided to stiffen the shaft and prevent its springing, thus insuring accurate work. The heads are adjustable and are of the expansion variety. They are made to expand to twice their narrowest width without change of bits. Three regular sizes are made, cutting respectively from $\frac{1}{8}$ inch to 1 inch, from $\frac{1}{4}$ inch to $1\frac{1}{4}$ inches, and from 1 inch to 2 inches. The bed is below the cutters, and is furnished with grooved slides running on planed ways, and is provided with handles and clamps to hold down the stock. The advantage of having the bed below the heads is that the inequalities of the stock do not affect the accuracy of the cut. The inequality being on the inside of the box or frame causes the uncut portion or outside always to measure alike. The machine is adapted to be belted either from above or below the floor, as may be most convenient.

The engine house and hoist house of the Vigo Iron Company, of Terre Haute, Ind., were totally destroyed by fire on the morning of the 31st ult. The loss is placed at \$8500, on which there was an insurance of \$5500.

enactment covering the subject may be necessary to secure permanent relief. After somewhat extensive inquiries with reference to underbilling, the commission announces that it concurs with the various boards of trade and commercial bodies from the larger cities of the country, which have requested the amendment of the law by imposing a small penalty upon shippers who, by false billing, false classification, false weighing, or false report of weight or by other devices, knowingly and wilfully obtain transportation for their property at less than the regular rates.

The evils which of late form the chief burden of complaint, so far as examined, are confined for the most part to east-bound freight from Chicago, and to some extent are involved with the export trade on through routes to Europe. At this very moment the leading dressed beef shippers in Chicago are making preparations for instituting suits in the United States Court against railroads from that city on account of alleged discrimination. A difference of 20 cents in Boston rates and 10 cents in New York rates, the shippers say, is the rankest kind of discrimination.

Analyzing statistics gathered by the commission in the course of its investiga-

vidual shippers, giving less attention to the "long haul" and "short haul" clauses while they inquire into underbilling and fraudulent invoices, are quite as likely to serve the interests of trade as if prosecuting the line of inquiry originally marked out.

The *Railroad Gazette* reports that a firm who have added Bessemer converters to their original iron-making plant lately sent out a large number of steel bars and rods for smiths' use. These bars were supplied to customers who had formerly used the wrought-iron bars made by this firm. The users have, however, made no complaint, and apparently found that the steel could be as readily worked and welded as the iron formerly supplied.

On the 9th inst. the New Orleans *Times-Democrat* printed a very interesting special issue dealing with the resources and their recent development in Tennessee.

Mr. Frank C. Roberts, of Philadelphia, Pa., has contributed to the transactions of the American Institute of Mining Engineers a lengthy and very instructive paper on wire rope haulage and its application to mining.

A New Planer.

The Hendey Machine Company, of Torrington, Conn., have just finished a new planer which embodies a number of improvements. The engraving which we annex will explain the general design.

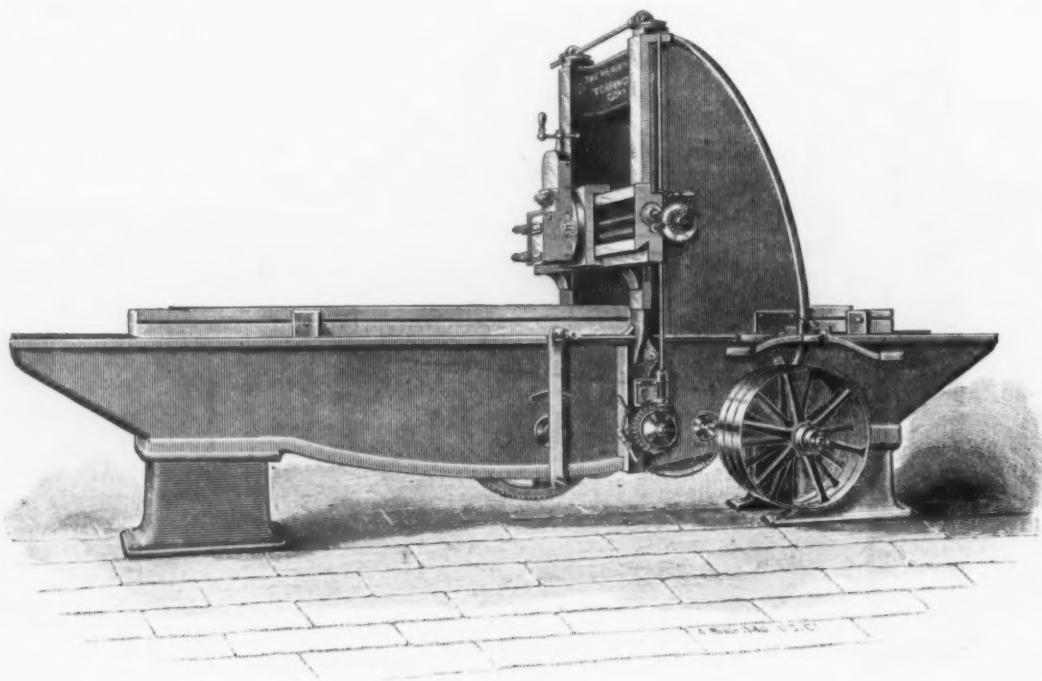
The dimensions are 27 x 27 inches by 8 feet. The bed is made in truss form, very deep and strong. It is well braced on the inside, long in proportion to length of table (being 12 feet long), and supported on heavy box legs well under, to carry the weight to best advantage. The table is very thick, and has three bolt slots planed from solid metal, and the bolt heads will pass from end to end with ease. The holes in the table are drilled and reamed by jig, and are square across. The uprights have sufficient weight and width to resist the heavier cuts when the crosshead is at its full height. The girt between the top of the uprights is very wide and well fastened, and adds very much to their

could close its affairs to-day with at least \$500,000 balance in their treasury. These are facts. Its net earnings for the year, with March estimated at \$10,000, will be \$170,000; deducting \$60,000 of bond interest, leaves \$110,000 net for the stock. Our method of accounting is somewhat different from railroad companies, as in the monthly account of net earnings we carry no 'improvement' account whatever. Every item of expense, whether improvement or otherwise, unless for new buildings, is charged in to operating expense; consequently the amount I give you above is actual net earnings, representing cash on hand, as shown by the monthly sheets. The trial balance at the end of our fiscal year, March 31, will show the net earnings larger than the above, as in the monthly sheets many items are estimated below what they actually net. We have spent a large amount of money in the betterment of the property, such as new machinery, repairs and enlargement of furnaces, which

tion operated by a solenoid, whose coil is thrown in circuit as needed by the relay. These carbons last from 50 to 60 hours, and the arrangement permits a very short lamp, only a little over a foot in its extreme vertical dimensions, the lower part of the lamp being surrounded by an inverted glass dome similar to those used in the Pintsch system of gas-lighting and in the Siemens regenerative gas lamp. One element of advantage connected with this lighting is the absence of any shadows below the horizontal plane. There have been revolving disk lamps in which the carbons are at right angles to each other. The new lamp is the invention of Mr. F. Heymann, and is to be introduced in this country.

Electrical Transmission of Power.

As an interesting instance of the transmission of power by electricity over long distances, the London *Electrician* refers to



NEW PLANER, BUILT BY THE HENDEY MACHINE COMPANY, TORRINGTON, CONN.

strength. The table receives back and forward motion from an open and cross belt, through a powerful train of cut gears and a rack. The driving pulleys are of large diameter, and the proportion of belt speed to speed of table is 60 to 1, and one belt shifts ahead of the other. The gears are carried on large steel shafts, with long bearings. The feed is arranged to work in all directions, and is adjustable from 0 to $\frac{1}{4}$ -inch wide. Feed is obtained by an oscillating disk controlled by stops, and is adjusted by the worm and screw, as shown in the engraving, and can be set very quickly. The up and down feed can be operated by hand from either end of the crosshead, which is very convenient when crosshead is up very high. Raising or lowering the crosshead does not in any way affect the feed, as with a rack and pinion and many other methods in use. The machine will plane full length between the pockets on the ends of the table. The countershaft has 12 x 3 inch pulleys. The weight of the planer is 6700 pounds.

In a letter published in the *Stock Holder* Mr. H. D. Turney, vice-president of the Columbus and Hocking Coal and Iron Company, speaks as follows in regard to the affairs of that concern: "The company is prosperous, is making money, and

money has been earned during the past year, and will appear in the statement as a portion of our net earnings. I may further say that the above statement shows the result of the most unfavorable year for business we have ever had. Our railroad has been more occupied with its lawsuit than doing its business, and as the result we have been cut down to less than two-thirds of our coal capacity, and have been hampered very largely in doing our business. Further than this, our furnaces were closed down for three months of the year on account of drought, and many other things conspired the past season to make the year a most unfavorable one."

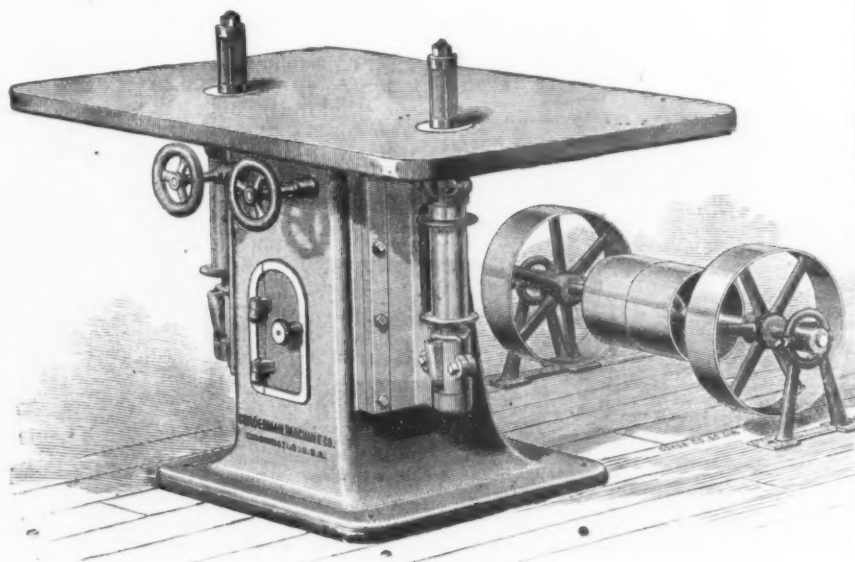
Disk Arc Lamps.—In a new form of electric arc lamp, of which an account is given in *Engineering*, the light is formed between two circular plates or disks of carbon, each of which revolves upon vertical spindles let down from the feeding apparatus in the upper part of the lamp. These disks revolve in opposite directions and at different speeds, so that the same points do not repeatedly come opposite to each other. The length of the arc is regulated by a compound wound magnet in the usual manner by swinging one of the spindles toward or from the other one, and the revolution is made by the ratchet mo-

that at the Phoenix Gold Mines in New Zealand. The current is generated by two No. 8 Brush machines, each capable of giving 20,000 watts, or 26 horse-power. They are driven by Pelton water-wheels, with a head of 180 feet. The current is conveyed to the motor about three miles distant, and back again by a No. 8 B. W. G. copper wire (0.165 inch thick) nearly six miles long, supported on telegraph poles. The power lost in the line is only 3 horse-power. A Victoria motor is used, running at about 350 revolutions per minute, and the power is transmitted to the machinery by a belt. At Hatfield, on the Marquis of Salisbury's estate, the River Lea is utilized to generate electricity which is transmitted to the house and over the estate for a variety of purposes. Two turbines are used—one to drive a 40 horse-power Siemens alternating-current dynamo for lighting the house, and the other to drive a 16 horse-power Brush machine for arc lighting at night, and in the day for working the motors at the house and on the farm. Those at the house drive pumping and ice-making machinery, and a 24-inch Blackman air propeller fixed in the roof for ventilating. On the farm the motors are used for elevating hay and corn sheaves to the tops of the stacks, for thrashing, for cutting rough grass with

chaff-cutting machine, for ensilage in fields extending to a distance of two miles, for grinding corn, &c., to make fodder, and for other purposes. The motors have also been used for pile driving, for making coffer-dams where necessary in the river, and also for dredging the river and cleaning it of weeds. A Gramme motor, capable of raising 2500 to 3000 gallons per hour, pumps the town sewage into a tank at a height of 30 feet for irrigation. The conductors are carried overhead on poles about the farm, and underground in wooden troughs to the house.

Double-Spindle Shaping Machine.

The Cordesman Machine Company, of Cincinnati, Ohio, are bringing out a new vertical double-spindle shaping machine of medium size, a general view of which is presented in the annexed engraving. The machine is intended to work straight and irregular forms for furniture, architectural implemans, carriages, wagons and other



DOUBLE SPINDLE SHAPING MACHINE, BUILT BY THE CORDESMAN MACHINE CO., CINCINNATI, OHIO.

similar work. The machine is of modern design. The column is made heavy, and the metal is well distributed. It is cored out, and cast in a single piece. The base is very wide, thus giving the machine a substantial floor support. The coring is so arranged as to form a rib on the outside in a way to stiffen the machine and lessen the liability of breakage. The column is fitted with a door, making the space on the inside a convenient receptacle for tools. The spindles are long, stiff, accurately turned and truly ground. They are made of 1½-inch steel, and measure 1 inch in diameter above the table. They are placed 24 inches apart, measured between centers. They revolve in cored-out frames, having connected, self-oiling bab-bitted boxes with improved composition metal take-up steps for end play. The frame work, by being planed through and gibbed to plane ways on the column, is arranged to keep the spindles in perfect line and from heating. The spindles are adjusted vertically by means of screws on the inside of the column operated by the hand-wheels in front of the machine. The iron table, which measures 40 x 46 inches, is cast in one piece, and is amply large for any kind of work. It is well braced, carefully planed, and fitted with concentric rings to suit the various sizes and kinds of heads and cutters. When desired, concentric rings may be made with a project-

ing collar above the table to act as a guide. A wooden table is substituted for the iron table when desired.

The Beam Engine for Steamboats.

According to a recent statement in the *Marine Journal*, all the steamboats running on the Hudson River previous to 1824 belonged to the North River Line or Fulton & Livingston's Line, holding the monopoly of the water of New York State, and had "square" engines. After the United States Supreme Court removed all barriers to the free navigation of the water of the State, in 1824, there were many opposition lines started, but none of the steamboats had beam engines until Robert L. Stevens, of Hoboken, N. J., placed on the river, in 1827, the Albany, the North America and the New Philadelphia, all of which had that type of engine, the North America having a pair with cylinders 44 inches diameter and 8 feet stroke, while the other two had single engines. It is more than

nections of beams or other columns with columns, plain and ornamented pilasters, gas-pipe or sash columns in great variety, store fronts, stairways, lamp-posts, hitching posts, railings, brackets, &c. These sections of rolled iron and steel beams are very full and complete in minutest detail.

The New Western Nail Classification.

At the meeting of the Western nail manufacturers, held in the Monongahela House, Pittsburgh, on Wednesday, the 8th ult., it was resolved to prepare a new classification on nails to be submitted to the manufacturers at the next regular meeting, which was held in the same place on Wednesday, the 11th inst. This classification has been agreed to by all the manufacturers, and it will go into effect on Friday, June 1. We print below the new classification, and have taken as a base price the present card rate on nails, which is \$2.10, less 10 cents per keg in carload lots, or 2 per cent. off for cash. Should the card rate be changed before this new classification goes into effect the same advance and reduction will be made on all nails smaller than 20d as is given below. The new classification is as follows:

Sizes.	Present extras.	New extras.
Nails, Fence and Brads.		
20d to 60d.....	base	base
16d.....	base	\$0.10
12d.....	base	.20
10d.....	base	.30
8d and 9d.....	\$0.25	.40
6d and 7d.....	.50	.50
4d and 5d.....	.75	.60
3d.....	1.50	1.25
2d.....	2.25	2.00
Casing and Box.		
10d to 30d.....	.75	.75
8d and 9d.....	1.00	1.00
6d and 7d.....	1.25	1.25
4d and 5d.....	1.50	1.50
3d.....	2.50	2.50
Finishing.		
3 inch.....	1.25	1.00
2½ to 2¾.....	1.50	1.25
2 to 2½.....	1.75	1.50
1½ to 1¾.....	2.00	1.75
1¾ inch.....	2.25	2.00
1½ inch.....	3.00	2.75
1 inch.....	4.00	3.75
Cut Spikes.		
All sizes.....	.25	.25
Common Barrel.		
1½ inch.....	.75	.70
1¾ inch.....	1.00	1.00
1½ inch.....	1.25	1.30
1¼ inch.....	1.50	1.50
1 inch.....	2.00	1.80
¾ inch.....	2.25	2.00
¾ inch.....	3.25	3.00
Light Barrel.		
1½ inch.....	2.00	2.00
1 inch.....	2.30	2.30
¾ inch.....	2.50	2.50
¾ inch.....	3.50	3.50
Slating.		
4d and 5d.....	1.00	.90
3d.....	1.75	1.50
2d.....	3.00	2.50
Fine Blued.		
4d.....	1.75	1.50
3d.....	2.25	2.00
2d.....	3.00	2.70
Tobacco.		
10d.....	.25	.50
8d.....	.50	.75
6d and 7d.....	.75	1.00
Lining.		
¾ inch.....	4.50	3.50
¾ inch.....	6.00	4.50
Boat Spikes.		
All sizes.....	.75	1.00
Clinch.		

All sizes, \$1 above common nails of same length.

Each half keg 10 cents extra. An abatement of 10 cents per keg will be allowed on orders of 240 kegs and over.

Terms.—Note or acceptance at 60 days with current rate of exchange on New York, or a discount of 2 per cent. for cash if remitted within 10 days from date of invoice. To secure carload rates orders must be 240 kegs.

probable that the Albany, built in 1826, was the first to run to Albany from New York of the three. A few years previous to this date there were two or three ferry-boats on the North River ferries having beam engines, one of which was the Hoboken, built in 1822, and, it is believed, the Pioneer, built in 1825, also. We are informed that Mr. J. H. Morrison, of New York City, has the only full and correct list of steam vessels built in the United States, with their dimensions of hull and engines, that there is at the present day.

Manual of the Bouton Foundry Company.—Containing useful information for architects, engineers, builders and others, also cuts of patterns of columns, &c. Issued and copyrighted by the Bouton Foundry Company (successors to Union Foundry Works), 2600 Archer avenue, Chicago; 192 pages, 4½ x 7½. This manual is of special value to architects and builders, although its contents will be found very useful to all engaged in structural work and its auxiliaries. Tables and rules are given for finding the weight of cast and rolled iron of various shapes, the strength of columns, of riveted girders and fitch-plate girders, as well as a great variety of useful information relating to other building shapes. Illustrations are given showing styles of iron columns, con-

A Proposed Tin-Plate Trust.

Although the scheme to form a tin-plate trust in Wales has failed, an announced in the cable report of *The Iron Age* of April 12th, it may be of some interest to the trade to present the following propositions formulated by Phillip S. Phillips:

1. That a syndicate be formed, called The Association of Tin-Plate Makers, with a capital of £200,000 in £100 shares—each tin-plate maker to take one £100 share for every mill he has to qualify him to become a member. The remainder of the shares to be offered pro rata to the makers according to the number of mills they have; supposing, for instance, makers representing 333 mills joined, this would give six shares per mill if all elected to take them; but, if any maker declined to take more than one necessary share, then the surplus shares to be offered to the other makers pro rata, and, if not taken, privately to any one desirous of taking them.

2. That £25 per share be paid on the registration of the company, and the balance as required in calls of £25 per share, but such calls not to be at a less interval than one month from each other.

3. That a council of six members be elected by the general body of members with full powers to act upon their behalf, and do and order all things to be done within this arrangement, and which are specially defined: To make calls; to issue debenture bonds; to borrow money upon debentures, or upon warrants of tin plates, to the extent of £300,000; to sell tin plates; to advance or reduce prices of tin plates; and to order any reduction of make that may be deemed necessary from time to time.

4. That the syndicate be formed for one year, but if at the end of that period four-fifths of the makers agree, to be extended to three years, any maker, however, to have the option of withdrawing at the end of the former period.

5. That the capacity of make of each works be assessed at the formation and registered, so that any reduction of make ordered by the council would have to be carried out by percentage only upon this basis and certified by a properly authorized accountant each month from the pay book. That the mills be classed under three heads: (1), the large, powerful, modern mills, 650 boxes per week; (2), 550 boxes per week; and (3), small and water mills, 450 boxes per week.

6. That the lowest authorized selling prices be based upon—C 14 x 20 common coke, 14/9; C 14 x 20 Bessemer steel coke, 15/-; C 19½ x 14 Bessemer steel coke, 15/3; C 14 x 20 Siemens steel cokes, 15/6; C 14 x 20 ordinary charcoal, 17/-; C 14 x 20 best charcoal, 19/- @ 21/-; C 14 x 20 ordinary charcoal ternes, 12/6; C 28 x 20 ordinary charcoal ternes, 25/-; all f.o.b. makers' shipping ports, for the first month. That at the expiration of the first month prices be advanced 1/ per box all round upon the above prices, and there remain until altered by the council.

7. That a reduction of make of 20 per cent. upon the assessed capacity be made for the first month; a reduction of 10 per cent. for the second month; afterward works to go on full time, subject, however, to any reduction of make the council may deem necessary to order from time to time.

8. That each maker be allowed to sell all he could of his own make at the prices fixed, the remainder of his make to be taken by the syndicate at 6d. per box less, every maker to pay to the syndicate 3d. per box of 14 x 20 upon his sales each month, to be certified by an authorized accountant and paid monthly, each maker

to work only upon ordinary saleable sizes, over and above his orders, that the syndicate may be called upon to take.

9. That the council meet about the 15th of each month for the carrying out of the business of the association, and any alteration of prices or reduction of make they may deem it necessary to order to be carried into effect by each maker from the first of the month following.

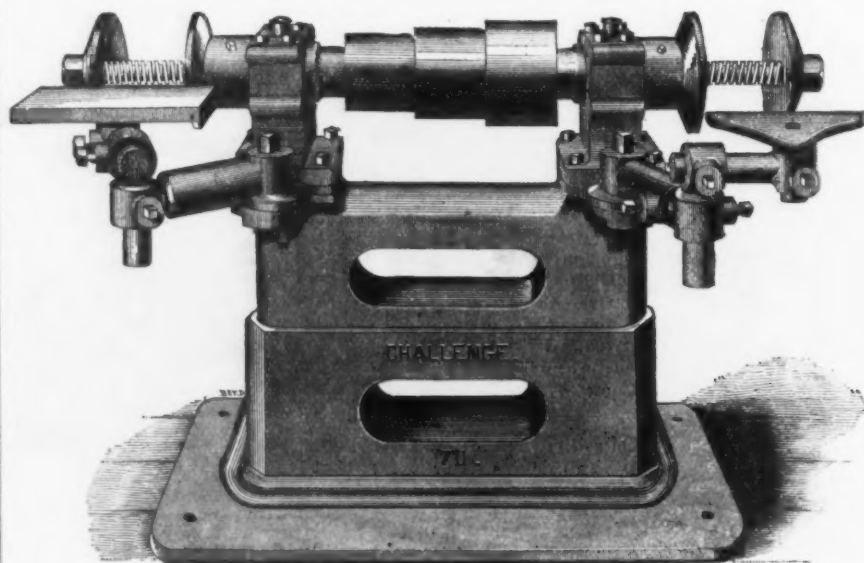
10. That each member undertake during the period of this arrangement not to commence or erect any new mill, but may complete any that are in course of erection.

11. That all tin or terne plates taken over by the syndicate be stored at the shipping ports of Swansea, Cardiff and Newport, and sold by the council, through properly authorized agents, at the prices fixed, but should they experience any difficulty in selling any large accumulations of stocks of the previous month so taken over the council to order such general re-

power required for hauling purposes below. A second borehole, 6 inches in diameter and 118 feet deep, was also put down, and through it were passed two 2-inch pipes to be used as a speaking tube and for a bell-wire, to permit of communication between the engine-house and below ground.

New Emery Grinder.

The Diebel Mfg. Company, of Philadelphia, have brought out a new emery grinder designed for large wheels for foundries, machine and railway repair shops, &c. The general features of the machine are shown in the annexed illustration. It has a steel spindle 57 inches long and 9-inch bearings. The wheels are 37½ inches apart, allowing two men to work at the same time. There are two rests, which can be set at any angle. A special feature of the grinder is the bearing protector, which not



NEW EMERY GRINDER, BUILT BY THE DIEBEL MFG. CO., PHILADELPHIA

duction of make for the following month as would take off any such large and undue increase of stock.

12. That all "special" makes of plates or brands be outside the purposes of this syndicate.

13. That each maker will be responsible to the syndicate for his own deliveries of plates that he makes to them—that they are in good order and condition, of the proper marketable qualities, sizes and weights according to standard.

14. That each member contract with the others to carry out this arrangement in all good faith, and be legally bound over in the sum of £5000 for willfully committing any breach therein.

15. That a general meeting be held at the end of each six months and a statement of accounts presented, and such dividends declared as they may justify.

Conveying Power by Boreholes.—A novel method of conveying power to mine workings is described in a recent number of the *Colliery Engineer* as being in use at the Shenandoah mines, Pennsylvania, in which, as the lower level of the Mar-moth seam had been, in 1883, nearly worked out, it became advisable to develop new workings. To convey power to these an 8-inch hole was drilled from the surface to the seam, a depth of 244 feet, and when finished this hole was lined with a 5½-inch casing pipe, through which was passed a 1-inch steel wire rope, transmitting the

only keeps the dust from the bearings, but oil from penetrating the wheels, which become useless when saturated with it.

The *Moniteur Industriel* records the fact that on the shores of Brittany, between St. Malc and St. Lunaire, in the vicinity of the St. Enogat station, at a place called Port Blanc, the tides have lately displaced a considerable mass of sand to a depth of 9 to 13 feet. Forests which have been buried for 18 or 20 centuries have been thus brought to light, to the great astonishment of the seafaring people of the country. A great forest has in fact been discovered in process of transformation into coal. Ferns and the trunks and barks of trees are to be seen in an advanced state of decomposition. They are already beyond the peat stage, showing the films and flakes which are found in coal. Some of the trunks are 16 feet in length, still very distinct, although becoming quickly transformed.

Mr. Powderly is out with a manifesto urging the Knights to work for the adoption of eight hours as a day's work. He advises the Knights to discuss the eight-hour plan dispassionately with their employers. He says that an immediate change cannot be insisted on, but that a practical plan should be perfected, after advising the men how to proceed in their efforts to obtain the desired result.

MANUFACTURING.

Iron and Steel.

Another manufacturing establishment will soon commence operations at Pittsburgh. Morris, Williams & Bailey is the title of a firm just organized in that city, which purposes to go into the manufacture of cold rolled steel, and at present the necessary buildings are being erected. The main structure will be 60 x 80 feet and onestory high, while another will be 32 x 46 feet. The buildings are now almost completed and are situated on Liberty street on the Denny property. The number of men to be employed at the new works is not yet known. Steam will be furnished by three 42-inch boilers, and power by two powerful engines. The product of the works will be used for watch springs and other articles where fine work is required. Sheet steel as thin as paper will be turned out, there being only one other such works in the State, and it is located in Pittsburgh.

The partnership existing between the firm of Hussey, Howe & Co., Limited, the well known steel manufacturers, of Pittsburgh, expires on July 1 next and will be dissolved. It will probably not be renewed under the present title. The firm is composed of Dr. Hussey, Mrs. Thomas M. Howe and the heirs of the late Curtis G. Hussey. The capital stock of the concern is \$1,000,000. The firm is one of the oldest in Pittsburgh, having been organized in 1856 under the name of Hussey, Wells & Co. The Doctor has been wanting to retire for a long time owing to his old age, 84 years, and it is probable that the others will buy his interest.

The Carondelet Boiler and Sheet Iron Works, of St. Louis, have filed articles of incorporation, with a capital stock of \$4000.

No. 4 furnace of the Crane Iron Company, at Catasauqua, Pa., has recently undergone a thorough overhauling, and will resume blast in a few days.

The St. Clair Nail Mill, of Belleville, Ill., was organized week before last by the election of directors and officers. The officers are Henry A. Kircher, president; W. H. Powell, general manager; Joseph Fuess, treasurer, and Don Turner, secretary. The new company will operate the Western mill, and it is expected will start soon.

The furnace employees at Sharpsville, Pa., have been notified that a reduction in wages will take effect May 1. The cut is 15 cents a day for turn men and 10 cents for laborers. The furnace owners say that they will either have to shut down or reduce wages, owing to the condition of the iron market. The men will probably accept the reduction.

From the Steelton (Pa.) Reporter of the 14th inst. we take the following information regarding operations at the plant of the Pennsylvania Steel Company at that place: "This has been a week of large production around the works of the Pennsylvania Steel Company, all the departments making more than an average output. Bessemer mills Nos. 1 and 2 made extra good runs and are both above their average. The open-hearth furnaces were on special steels with a fair production. Several small castings were also poured. Nos. 1 and 2 blooming mills had a busy week in working up the output of the Bessemer mills. The hammers were on cruiser steel and forgings for shipment, with some slabs and billets. The rail mill has been on 56s, sec. 51, all week. The new table at the rolls is working well. The pattern-makers are overrun with work for the Maryland extension. The foundry prepared molds for several lots of small castings which were poured at the open-

hearth furnaces, besides making the usual work for home use. The frog, switch and signal department is busy, as usual, with no diminution of orders, and is working day and night. The machine shop is on new work entirely. The merchant mill was on rails and general merchant steel, and shows a large production. Nos. 3 and 4 blast furnaces are producing a large amount of No. 1 iron."

A meeting of the creditors of Graff, Bennett & Co., of Pittsburgh, who made an assignment some weeks since, was held in the above-named city on Saturday, the 14th inst., at 10 a. m. Assignee P. H. Miller presented the appraisal of the firm's assets, which reads as follows:

Investment.....	\$10,000.00
Miscellaneous.....	200.00
Live accounts.....	73,305.50
Warehouse stock.....	11,033.73
Fort Pitt.....	3,928.22
Clinton.....	52,177.31
Grafton.....	40,153.78
Millvale.....	41,551.43
Sheriff's sale.....	37,555.88
Millvale,)	\$1,000,000
Clinton, (Mortgages.....	650,000
R. H. Marshall schedule.....	19,300.00
John Graff.....	13,200.00
Total.....	\$652,605.94

LEFT OUT AND UNKNOWN.

Old and disputed accounts.....	\$213,975.04
Grafton Iron Company.....	404,183.56
Claim vs. Pa. Natural Gas Company.....	
Kittanning Company (cost of original investment).....	68,185.78
Pittsburgh Iron Mining Company.....	16,675.00
Oil Farm, Butler Company.....	30,343.12
Lockhart, Bennett & Co.....	15,856.67
Mercantile Library Hall stock.....	2,000.00
Lands in Hancock County, Va.....	1,600.00
Empire Iron Company.....	330.00
Manchester Iron and Steel Company.....	36,172.55
Pittsburgh, New Castle and Lake Erie stock.....	1,000.00
San Francisco property.....	29,984.52
Stewart Farm, Blair County.....	2,500.00
Siemens-Anderson property.....	24,939.28
Empire Plow Works.....	3,880.00
Paulding Iron Company.....	88,976.83
National Printing and Telegraph Company.....	2,356.54
John Graff (advance payments on Ft. Pitt).....	101,900.82
St. Louis Warehouse stock.....	
Fayette Coke Works.....	
Natural Gas Company stock, being 3-7 of the line from Butler County to Spang, Chalfant & Co.....	

After an animated debate, during which several resolutions were offered and withdrawn or voted down, the representative of the Minnesota Iron Company, one of the heaviest creditors, said that Mr. Miller did not seem to be a suitable person for the position of assignee. He could not tell the creditors whether Graff, Bennett & Co. were a partnership or a corporation, whether the St. Louis concern was a branch or part of the firm, and besides that he had allowed iron to be taken from the premises of the bankrupt firm and had taken bad collateral in return for good iron. He concluded by saying that he was so dissatisfied that he would ask Mr. Miller to resign in order that the court might appoint some more satisfactory assignee. He said he would put this in the form of a resolution, which he did, and it was seconded by J. W. Friend. It was passed by a vote of 24 to 13. It is expected that Mr. Miller will send in his resignation this week, when a new man will be named at the instance of the creditors.

Rogers, Brown & Co., of Cincinnati, Chicago and St. Louis, are selling agents for the Hinkle brand of Lake Superior charcoal pig iron, made by the new furnace of the Ashland Iron and Steel Company, at Ashland, Wis. We take the following statement from a circular just issued by that firm: "The new furnace of the Ashland Iron and Steel Company was successfully blown in April 5, 1888. It is the largest and best equipped plant in the world for making charcoal iron. The stack is 65 feet high by 12½ feet bosh. It is furnished

with two Whitwell stoves and one Allis-Corliss blowing engine of 78-inch cylinder. The casting-house is 50 x 130 feet, the stockhouse 60 x 150 feet, and the engine-house 38 x 43 feet; boiler-house same size. The smoke-stack is 150 feet high and 7 feet in diameter. All the buildings are of brick, and most substantially built. There are 50 brick charcoal kilns finished, and more under construction. These are located along the lines of railway south of Ashland in the dense hardwood forests that abound there. The Ashland furnace enjoys the peculiar advantage of being directly connected with all the great ore ranges of the Lake Superior district—Gogebic, Marquette, Menominee and Vermillion. It has five railroad connections, and can ship by water to any leading port on the lower lakes. Every department is under able and practical management."

On Saturday, the 14th inst., J. Painter & Sons, of Pittsburgh, notified their employees that, commencing with this week, twenty-three of the puddling furnaces would be shut down. The reason given is that the firm has not enough orders on hand to keep the entire mill running. Next week the furnaces that run this week will be closed down and those that will be idle this week will be put in operation. About 125 to 150 men will be laid off each week.

On the morning of the 9th inst., the Glendon Iron Company, of Easton, Pa., posted a notice of reduction of wages of their employees, to take effect from that date. The molders were discharged and their helpers put in their places. Fifty men were also discharged and the same number were put on half-time. As the idle men can get no information as to when the furnaces will be lighted, many of them are preparing to seek work elsewhere.

The Ellen Ross Iron Works, of Birmingham, Ala., under date of the 8th inst., inform us that they have only been in operation for eight months, and in that time have more than doubled their capacity, and are still unable to keep up with their orders. Further additions to their plant are contemplated in the near future.

The entire plant of the E. & G. Brooke Iron Company, Limited, at Birdsboro, Pa., shut down on Friday, the 6th inst., for a period of two or three weeks. The report that the shut-down was for an indefinite period is untrue.

Lean & Blair, engineers and contractors, Pittsburgh, have contracted to build an open-hearth steel plant at Findlay, Ohio, for the Kellogg Seamless Tube and Mfg. Company, which they estimate will effect a very large saving in fuel. The furnaces are to be of the Lash type. One of the furnaces will be pushed to completion as rapidly as possible, as the company expect to be making seamless steel pipe, under their patents, by July 1 next. Experts and consumers believe that seamless steel tubing for boiler tubes, steam, water and gas pipes, &c., is to supplant the old lap-welded iron tubing hitherto used.

Some few weeks since a strike took place at the Delaware Rolling Mill at Phillipsburg, N. J., which has not yet been settled. Under date of the 7th inst., A. L. Howe, manager of the concern, furnishes us with the following information regarding the matter: "The Delaware Rolling Mill, Phillipsburg, N. J., has been idle since the 17th of March. On the 24th the management proposed to the men that if they would make an additional heat on the night turn from that date until June 1, it would reduce the cost of production sufficiently to allow of accepting orders that were offered, which would keep the mill going and the men employed, but that unless the men in this

way helped to make it possible to accept these orders there could be no positive assurance of steady work. The men declined to make the extra heat, in spite of the fact that it meant more money in their pockets, and the mill has remained idle.

Mackintosh, Hemphill & Co., Limited, proprietors of the Fort Pitt Foundry, at Pittsburgh, are making a number of great improvements in their plant, at the foot of Twelfth street, in that city. Two large buildings, one of brick and one of iron, are being erected by the firm, which, when completed, will give employment to from 150 to 200 additional men. The brick building has dimensions of 220 x 115 feet. It will have two traveling cranes of a capacity of 25 tons each, and will be fitted up with the latest improved machinery, and will have facilities for turning out castings of 35 tons in weight. The iron building will be used for grinding, annealing and turning of steel castings. The building measures 220 x 90 feet, and will contain six cranes with a capacity of 15 tons each. This firm are just completing six large steel rolls for the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa. One of them was shipped on Friday, the 12th inst. These rolls are said to be as large as any in this country made of steel, each one weighing 18 tons. They will be used to roll 20-inch eye beams for elevated railroads and railroad bridges.

The Girard Iron Company, of Girard, Ohio, under date of the 9th inst., write us as follows: "We started our furnace last week after a stop of two weeks. Our men were not willing to take any reduction at the time we banked the furnace, and we secured new men in their stead and let 29 of them go, many of whom have been in the employ of this company for upward of 20 years. They all now express a desire to return to work, but we have no need of their services at present. Orders are scarce and prices are ruling low."

The Hubbard Iron Company, of Youngstown, Ohio, have recently erected and have about ready for use a furnace for breaking down old iron rails.

The plant of John S. Penney & Co., founders and machinists at McKeesport, Pa., has been levied on to satisfy a judgment held by R. A. Penney for \$11,087. About 50 men are thrown idle by the failure of the firm.

The Cambria Iron Company, of Johnstown, Pa., have temporarily suspended all Sunday employment at the steel works and blooming mill, and, as far as possible, at the blast furnaces. Until the 8th inst. one turn went on at 4 o'clock on Sunday evening and another at midnight. Under the new regulation the works will be idle from Saturday night until 8 o'clock Monday morning. The present depressed condition of the steel business permits the doing of all work necessary within six days, and the officials of the company therefore decided to give their men, as far as possible, the benefit of a rest on Sunday. Should there be a rush of orders, necessitating more active operations, the Sunday turns will be restored.

The blast furnace at Martin's Ferry, Ohio, owned and operated by the Benwood Iron Works, of Wheeling, W. Va., was blown out week before last for the purpose of undergoing some extensive improvements. The furnace will be practically rebuilt and will be idle for about two months. As soon as these repairs are completed the furnace will again resume operations and will have an increased capacity of about 150 tons per week.

Bellefonte charcoal furnace, at Ashland, Ky., went out of blast on the 3d inst. for repairs. Two new calcining kilns, 20 x 16,

are being constructed and a new crane hoist is to be put in. The furnace will blow again on or about the 15th of May.

The Ella Furnace Company, of West Middlesex, Pa., are at present experimenting with a new device for making gas from crude petroleum. If successful they will utilize it under the boilers.

Two blast furnaces are about to be built at Talladega, Ala., by English capitalists, who have become interested through G. W. Chambers, of Talladega.

The Scranton Steel Company, of Scranton, Pa., have once more advanced their record. On Wednesday of last week the converting department produced 828 gross tons, 417 tons in the day shift and 411 tons in the night shift. In the night turn the mill made 394 tons of blooms and 401 tons of rails.

Machinery.

The Lidback Mfg. Company have been organized at Portland, Me., with a capital stock of \$100,000, to manufacture the engine invented by J. A. Lidback, of that city.

At the warehouse of the New York Belting and Packing Company, 15 Park Row, New York, may be seen several immense rubber elevator belts weighing 8 tons, in transit via Hamburg-American Packet Company to Buda-Pest, Hungary.

The Star Steam Heater Company, of Mount Joy, Pa., have just added a boiler department to their works fully equipped with machinery. They will not only build the boilers for their own extensive trade, but will also engage in all kinds of new and repair boiler work.

Special circulars of air compressors for elevating acids, working pneumatic riveters and sinking caissons for piers of bridges, also of vacuum pumps for sealing incandescent electric lamps, have been issued by the Clayton Air Compressor Works, 43 Dey street, New York.

As an evidence of the spread of their business, the Laidlaw & Dunn Company, of Cincinnati, report the recent shipment of a large order for machinery of their production to Sydney, Australia, and the receipt of an order for one of their largest size Duplex pumps, from Yokohama, Japan, while their domestic trade is keeping up to its usual standard, among their more recent contracts being one with the Commissioners of the Ohio Valley Centennial Exposition to furnish all piping, fittings and valves used in fitting up the engines, boilers, &c., also to furnish all the material for the steam and water heating in the new Chamber of Commerce building of their city.

The Castle Engine Company were, on the 10th inst., reorganized, and the following named gentlemen elected to serve as officers: J. R. Allen, president; O. H. Castle, vice-president; O. N. Allen, secretary. The capital stock increased to \$30,000. The company will at once enlarge their present facilities for manufacturing in order to fill all orders promptly. They are now producing seven sizes, three of which are single cylinder and the balance double cylinder engines. They have in preparation patterns for a triple cylinder engine, which they expect shortly to put upon the market.

The Electric Mfg. Company, of Greenbush, N. Y., will shortly put on the market a new drill chuck of improved design. They are now putting in machinery for its manufacture.

The Union Foundry and Machine Company, Limited, of Pittsburgh, Pa., have issued a circular announcing that they are now prepared to make machine-molded gearing, including bevel, miter, hunting-

tooth and spur-wheels of all descriptions; also pulleys, band-wheels, sheave and fly wheels of any diameter and face.

The Atlantic Works (Messrs. London, Berry & Orton), of Philadelphia, Pa., announce that the partnership lately existing between W. E. London, L. H. Berry and L. O. Orton, of Philadelphia, under the firm name of London, Berry & Orton, manufacturers of wood-working machinery, was dissolved on the 26th day of March, 1888, so far as relates to W. E. London. The business will be continued under the firm name of Berry & Orton.

Hardware.

The Reading Hardware Company, of Reading, Pa., under date of the 12th inst., inform us there is no truth in the report that they have recently made a reduction in the wages of their employees, and also suspended a number of workmen. No reduction has taken place, and their works are running full in all departments.

The American Bolster Spring Company, St. Louis, recently organized, are making preparations to manufacture an ingeniously devised wagon spring, to be used on nearly all kinds of wagons. The firm are negotiating with the Government authorities for the sale of a large lot of the springs for army wagons. The device is the invention of J. M. Hunter, who is also the president of the company.

The Rockford Cutlery Company, formerly of Rockford, Ill., have purchased the entire plant of the Keokuk Cutlery Company, and have removed their shear and scissors works to Keokuk, Iowa. They will, as heretofore, manufacture a full line of shears and scissors, in addition to which they will make steel table cutlery. They will soon be in shape to turn out butchers', carvers, &c., their intention being to make as complete a variety of goods in the cutlery line as any other factory in the country. At present they occupy a two-story building, 75 x 90 feet, but as this does not give them sufficient room for their machinery they will build an addition during the summer. Among their heavy machinery are three presses and four drops. They have a complete outfit for 50 polishers, but will not put that number at work for some time, as the manufacturing machinery is not up to that capacity. They will retain the old name, Rockford Cutlery Company. C. H. C. Burlingame is secretary and treasurer.

On the night of the 14th inst. fire broke out in the south end of the works of the Wheeling Hinge Company, at Wheeling, W. Va., and, owing to the inflammable character of the structure, it was totally destroyed in a short time. The buildings contained the engines, boilers and fine machinery for hinges, staples, washers, garden rakes, fire shovels and pokers, and much partly finished stock. It was valued at \$5000, machinery at \$40,000, and raw material and partly manufactured goods at \$5000. The insurance on this department, it is said, does not exceed \$20,000. The fire originated from a sudden accession of natural gas under the boilers. The two large buildings of brick containing finished stock and machinery for nuts and bolts were not damaged seriously.

Miscellaneous.

The Lafayette Car Works, of Lafayette, Ind., have received a contract for the construction of 250 freight cars for the Duluth, South Shore and Atlantic Railroad, which are to be delivered by May 1.

A fire at Youngstown, Ohio, on the 12th inst., entirely destroyed the extensive mower and reaper works of W. A. Wood, which were soon to have been removed to Chattanooga. The fire started from natural gas in the foundry department. The loss is estimated at \$250,000, and is partly covered by insurance.

Foreign Markets.

EQUIVALENTS

	Cents.
Franc, Peseta or Lira.....	19.3
Florin (Netherlands).....	30.2
Florin (Austria).....	35.9
Millreis (Portugal).....	81.08
Millreis (Brazil).....	54.8
Mark (Germany).....	23.8
	Pounds.
Kilogram.....	220.5
Picul.....	134.

EAST INDIES.

SINGAPORE, February 29, 1888.—*Tin*.—Our last report was dated 14th inst.; owing to the holidays and other causes the time devoted to business in the interval has been limited. Tin advanced to \$54.37½ and is now on the downward move, business having been done to-day at \$53.25 ¾ picul. Stocks are temporarily large, but March will be a month of small supplies. A good deal has been done for the United States.—*Tonnage*.—Steamer rates to London are quoted 32/6 for weight. For New York the P. T. Carlton has not yet arrived from Penang, but she is fully engaged; the Carl Bath clears to-day. Rates are nominal. For Boston the berth is vacant.—*Exchange* is quoted 3/2½ for 6 months' sight credit. On the 13th inst. the steamer Belorophon took for New York from here 420 piculs, the next day the steamer Lord of the Isles 2103, and on the 21st the steamer Mogul took 108.—*Gilfillan, Wood & Co.*

MANILA, April 9, 1888.—*Hemp*.—The price is nominally \$8.12½ ¾ picul, against \$8.25 same time last year; ¾ ton cost and freight it is \$29. 5/, as compared with £27. 15/6 last year. Since last cable there have been no clearances for the United States, while last year 5000 bales had cleared. The total clearances for the United States since January 1 have been 43,000 bales, against 74,000 last year. There are now loading 20,000, against 7000 bales; the clearances for England since January 1 have been 104,000 bales, compared with 63,000 last year; loading for ditto, 4000, against 11,000 bales; cleared for all other ports, 30,000, against 11,000; receipts at all ports since last cable, 5000, against 8,000; ditto, since January 1, 157,000, against 123,000 last year and 100,000 in 1886. Freights, \$5, against same last year.—*Exchange*, six months' sight 3/8½, against 3/5.—*Kerr & Co. per cable to Chas. Nordhaus.*

COLOMBO, March 1, 1888.—*Plumbago*.—The market has been moderately active and steady at the following quotations in rupees per ton: Large Lump, 150 @ 160; Ordinary ditto, 115 @ 147.50; Chips, 80 @ 81.25, and Dust, 37.50 @ 60. *Coir Yarn*, Nos. 1 to 4, 7 to 12 rupees ¾ cwt.; Ebony, 120 @ 135 rupees per ton; Shipments of Plumbago from October 1 to March 1 to England, 43,404 cwt.; to Marseilles, 38 cwt.; to Hamburg, 2557; to Antwerp, 1787; to Bremen, 206; to India, 82, and to the United States, 63,412 cwt., together, 111,486 cwt., as compared with 90,235 in 1887, 81,546 in 1886 and 78,516 in 1885. *Exchange*, six months' sight, London, 1/5½.—*Volkart Brothers.*

ECUADOR.

GUYAQUIL, March 1, 1888.—*Ivory Nuts*.—The scarcity alluded to in previous reports of mine continues; there is only a very small quantity on the market; quotations are nominal at \$2.50 per quintal on shore, which corresponds at an exchange of 61 ½ premium to 9/4 ¾ cwt. free on board, including bags and commission. Total shipments during the first two months of the year have reached 60,546 quintals as compared with 53,160 last year and 33,647 in 1886. There are two vessels loading and five have been chartered, all for Ivory Nuts. *Exchange* on New York, 60 days' sight, 37 ¾ cwt premium.—*O. Wolfram & Co.*

RUSSIA.

ODESSA, April 12, 1888.—*Petroleum*.—News has been received from Baku & Batoum of a panic in Petroleum which has seized upon the markets there, leading to an extraordinary decline in prices.—*Per Cable Direct.*

CHILI.

VALPARAISO, February 15, 1888.—The export of Nitrate of Soda from Tiquique last year is shown by official figures to have reached 619,000 tons to Europe and 75,110 tons to the United States, together, 694,110 tons, as compared with 431,500 in 1886. In December alone the export amounted to 96,000 tons. The extraordinary increase has been due chiefly to large contracts for a Nitrate supply made by European beet-root farmers. At the same time the Mediterranean has taken larger amounts than formerly in consequence of an agricultural revival in several countries bordering on the same. In the United States the demand for Nitrate has been on the

increase, not only in the older States of the Union but also in California, where three times as much has been consumed of it than in former years. The latter is a significant fact, inasmuch as it shows that now already the soil of California, considered inexhaustible in point of fertility, begins to require manure of the kind.—*Weber & Co.*

MEXICO.

MEXICO, April 7, 1888.—*Hemp*.—The cultivation of Sisal Hemp has received an extraordinary impulse during late years in the Peninsula of Yucatan. Twenty years ago Yucatan was the poorest State of the republic; to-day it is the most flourishing one. What formerly used to be a parched desert is to-day almost one immense plantation, where Hemp culture prevails almost exclusively; it may be asserted that pretty much the entire peninsula is devoted to this new industry. Fourteen years since Sisal Hemp, or "Henequen," as it is called in Mexico, stood third in the list of export articles; coffee and hides, and in some years cabinet woods, taking the foremost rank. Last year the amount of Sisal Hemp shipped was double that of hides and three times of cabinet woods from all Mexico, while Yucatan is the only State producing Hemp.—*La Libertad.*

SPAIN.

BILBAO, March 31, 1888.—*Iron Ore*.—Has been firmly sustained during the week at 7/9 @ 8/ Campanil and 7/ @ 7/3 Rubios. There has been a steady good demand for England and other leading countries, but the weather has been so bad that mine owners have hesitated about making any further contracts; hence not much has been done. Shipments have gone on with much more vigor, and 20 steamers are now ready to leave harbor, being detained by the heavy sea outside. Shipments sum up so far 930,385 tons, as compared with 1,090,341 last year same time.—*Pig Iron*.—There have been shipped during the week 1171 tons coastwise and 3227 abroad. The Mudeia Company is now loading two steamers for Italy, to load together 5300 tons.—*Bilbao Maritimo y Comercial.*

Patent Leveled Iron.

J. W. Britton, patentee of the leveling process for smoothing sheet metal, has sent the following letter in reply to an article which appeared in *The Metal Worker* a short time since:

To the Editor of *The Metal Worker*.—DEAR SIR: In the issue of your valuable paper of March 10 there appeared an extended and able article on the subject of "Patent Leveled Iron." It will stir up the manufacturers who are operating this patent leveling machine to see that the invention is used properly, as they all have full instructions in regard to running it, which, if they would only carry out, there could be no cause for complaint from the most fastidious. There are, however, in the article a few statements which are misleading.

As to some sheets being comparatively level and others badly buckled, the instructions to the user of this machine are that when he has a number of sheets which are badly buckled, to lay such sheets in a pile by themselves until he has a pack and then stretch them at one time, then there is not an "unusual elongation" on a "comparatively level" sheet. The sheets that are quite flat should likewise be treated by themselves. Anyone who is acquainted with the handling of sheets can judge instantly as to those which should go into the machine at the same time. As to one sheet being heavier than another, that does not make the slightest difference, for material of one thickness—say, No. 28 gauge—if they are of the same width and length and buckled alike—can be treated with equally good results. At the International Inventions Exhibition, in London, 1885, at which time both "Method" and "Machine" were awarded a gold medal, there was an exhibit given before Sir William (now Lord) Armstrong with steel and iron, black and galvanized; tin, zinc and copper, all being of different gauges, but all 30 inches wide and 8 feet long. These were put into the machine, the elongation being only ¼ inch, leaving the materials absolutely flat. Again, the article states that if the sheets are of different lengths, this is detrimental. Now this cannot occur, because the sheets must be nearly of the same length or they cannot be treated, as they must be long enough to enable the grips to take hold of them or they would not be treated at all. As to iron being branded "patent leveled" which is far more buckled than that which is sold without this special treatment, from what the author shows he knows of the method in question he must admit that such material was never treated at all. But the users of the machine expect too much from it without giving the proper attention it should receive. It has been proved to be able

to do all that is claimed for it. However, it seems as though some think there is an unknown power concealed which enables the machine to only cast its shadow through a painted stencil and this is all that is necessary to produce a product absolutely level.

The author also says "he has found some workers of sheet metals who like the 'patent leveled material' and others who do not;" this is hard to imagine, however, for every one knows, no matter to what use the metal is put, that a great saving of time, expense and labor is the result in working with a product which is absolutely level, and not only this, but it has been discovered that the elongation slightly beyond the elastic limit gives a greater tensile strength. As an illustration: It takes about a strain of 70 tons to level a pack of 10 sheets, 26 x 30 inches wide, 96 inches long. If a number of these bundles are treated and the tension marked on them at the time of leveling, and then take the same packs in from 12 to 24 hours, time sufficient to recuperate, and the tension on each and every pack would be from 4 to 6 tons more than at the time of the first treatment. There is still another advantage to the consumer in using the sheets treated by this process: All the sheets coming from this machine, which have such imperfections as a cold shut, not perfectly welded, or receives a tuck or pinch in rolling, would be opened up, and consequently thrown out by the manufacturer, whereas such defects before could not be discovered until the consumer commenced working up the material, and the manufacturer would be blamed and his trade injured. Now such sheets do not leave the works. The writer has leveled some 10,000 tons of galvanized sheet and has never received a complaint from those who have used this product. To close, we must admit the invention to be a wonderful one, which is proved by the fact that there are now in use nearly 20 of these machines in the works of the principal sheet-metal manufacturers of the world, and many consumers are now demanding material which is patent leveled. J. W. BRITTON.

Commenting on the above we have merely to say that, while our language may have been misconstrued in some cases, it is still capable of satisfactory explanation, showing that we have not misapprehended the use of the device in question. So far as relates to some sheets being comparatively level and others badly buckled, we simply meant to indicate that some users of the machine are not employing it to the best advantage. Had they followed the directions of the inventor, as above explained, the necessity for the objections which we have raised would have been avoided. To this extent Mr. Britton's letter corroborates what we have said. As to sheets of different lengths producing different results, we intended to convey the idea that we have seen some bundles of iron marked "patent leveled" in which the short sheets occurred, which of necessity had not been stretched at all; and the fact that some sheets were treated and others not treated was the very thing of which complaint was being made. As to some liking patent leveled material and others objecting to it, the sentence referred to was used simply with respect to the article as it is sold. We do not think any one can object to leveled material, provided it is level; but any one has a right to object to material that is branded "patent leveled," but which has either been abused in the process or has not been treated at all.

In our description last week of the new heating boiler built by Messrs. Broomell & Sanks, of York, Pa., we seem to have given the impression that there is only one side-feed coal magazine. As a matter of fact there are two magazines, one on each side, as a careful examination of the front elevation and section will show. Coal can thus be introduced from both sides with equal facility.

Messrs. Stern Brothers, of Essen, Germany, according to a current report, have secured a patent for a new and improved process of casting copper. Practically perfect castings, we are told, can be obtained by it, and of any degree of hardness.

THE WEEK.

The Supreme Court decides in favor of the use of cables on the Third Avenue Railroad.

A careful estimate of the railroad extensions in the Northwest places the number of miles to be built at 1375, and adds that 3556 miles will probably and 1700 more may possibly be constructed.

One result of the Lackawanna's unrestricted position in the matter of coal production is that it is endeavoring to broaden the market for its coal in the West and Northwest by increasing its means of lake transportation. Several new steamers to run to Chicago have recently been provided for. The steamers Russia and Northern are now on hand, and two others, to be called the Lackawanna and the Scranton, are building at Cleveland. The line will begin operations soon and will probably be largely employed for coal traffic.

Judge Ingraham, of the Supreme Court, has decided that the assignment of the great dry goods house of Halsted, Haines & Co. was fraudulent, and has set it aside. This firm failed in 1884 for more than \$1,000,000. The principal object of the assignment, says the Judge, was to secure the assignors and the relatives as much of the assigned estate as possible.

Twenty-six leases of wharf property in this city were sold at auction and realized for the city treasury a total of \$489,175. The average was better than the last annual sale.

The National Rubber Works, at Bristol, R. I., were sold at auction to H. L. Daggett, of Boston, representing the creditors' committee, for \$200,000 over the mortgage.

The Chicago *Tribune* argues that the proposed colossal farmers' trust could never be successful. Even if all the farmers of Kansas were united and should determine to hold back their products they could produce scarcely a visible effect on the market. If all the wheat growers of the United States should combine their power would still be limited, because the entire wheat product of this country constitutes only about 21 per cent. of the world's supply. By holding back the American export—from 90,000,000 to 120,000,000 bushels per annum—they would greatly stimulate the wheat production in Russia, India, Canada, Australia and the Argentine Republic, and might find themselves completely ousted from the world's markets for their surplus.

The Mexican Minister at Washington has been instructed by President Diaz to negotiate a treaty of friendship, commerce and navigation with China, and another with Japan, through the Chinese and Japanese Ministers residing at Washington. The Pekin Government anticipated the United States in its efforts to prevent emigration from that country.

The colored people of the United States, who are now estimated to number 7,000,000, propose to conduct and hold an exposition of the result of their inventions, labor and productions in this, the 25th year of the emancipation of their race from slavery in this country, to illustrate their progress and achievements, and to furnish the Government information as to their educational and industrial status. Early in the present session a large delegation of these people had a hearing before the Senate Committee on Education and Labor. They asked the Government to aid them in their enterprise and to extend a loan to enable them to assure its success. As a result of this appeal the committee has recommended the passage of a bill providing for a loan of \$400,000, under

restrictions similar to those contained in the acts in aid of the Centennial and New Orleans expositions. The committee in their report say that the exposition is to be conducted by a body corporate, composed of representative colored men, known as the Colored World's Fair Association of America, incorporated under the laws of the State of Georgia. The city of Atlanta has tendered 200 acres of land and suitable buildings, free of rental charges. The exposition is to be located at Atlanta, and is designed to be held open from November 12, 1888, to February 12, 1889. In reporting the bill the committee submits the following, showing some of the appropriations made by the Government for former expositions: To Philadelphia Centennial for buildings, \$1,500,000; to enable the executive departments to participate, \$505,000; to engraving and printing Centennial stock certificates, \$30,750; to New Orleans Exposition, 1884-'85, \$1,000,000; to enable executive departments to participate in the same, \$300,000; to final aid New Orleans Exposition, \$335,000; to woman's department, New Orleans Exposition, \$15,000; to Paris Exposition, 1867, \$206,403; to Vienna Exposition, \$200,000; to Paris Exposition, 1878, \$190,000; to International Fish Commission, London, \$70,000; to International Fish Commission, Berlin, \$20,000; to Sydney and Melbourne, Australia, 1879, \$28,000. Total, \$4,400,153.

The costs of the Burlington Railroad strike are estimated by a Chicago local paper as follows: Loss of wages, &c., \$601,560; loss of the Burlington Company in traffic, expense, damage to property, &c., \$2,100,000.

The State sanitary authorities of Illinois have notified railroad companies throughout the State to give special attention to railway stations, as a precaution against an invasion by contagious or epidemic diseases now prevalent in South American countries and liable to be imported into the United States.

The labor discussion causes an unusual ferment in the breweries in New York, Newark and Western cities. The bosses as a rule seek to relieve themselves from union dictation, whether in regard to wages or other details of their business, but they find it difficult to lift themselves from the old rut.

The Reading Railroad has obtained nearly all the property required at Kaighn's Point for its terminal facilities for the Atlantic City Line, and work will probably begin before May 1.

Following in the wake of other countries, German manufacturing circles are agitating in favor of a law to prevent the marking of German goods with other than German marks.

The new iron tank steamship Standard, built at Roach's for the Standard Oil Company, made a very satisfactory trial trip on the Delaware last week, and will shortly begin carrying oil to coastwise ports. She is the only tank steamer under the American flag.

About 450 horse cars on the Third Avenue Railroad, soon to be displaced by a cable, will be sold to the Japanese Government, for use in Tokio, and be shipped around the Horn.

The foreign commerce of the Argentine Republic for last year shows up well. The official returns are as follows:

	1886.	1887.
Imports.....	\$94,467,000	\$116,292,000
Exports.....	60,659,100	82,827,000

The steam ice-crusher, St. Ignace, built expressly for winter service on the lakes, has arrived at St. Ignace, Mich., from the Detroit River, going through ice varying from 2 feet in thickness to windrows nearly 20 feet. Captain Boynton says her

bow wheel pulverized ice that was 3 feet thick and washed it astern out of the way. The boat is 235 feet long, 52 feet beam and 25 feet in depth. A 2000 horse-power compound engine propels her stern wheel. Her cylinders are 28½ and 53 inches diameter and 48-inch stroke. The forward wheel is driven by a compound engine, with cylinders 26 and 48 inches and 40-inch stroke. The pilot-house has a powerful electric search light.

Comptroller-General Wright, of Georgia, in his report, just out, calls attention to the increase in the value of the property of the colored people of that State. The increase has been 72½ per cent. since 1879. Then the colored people's property was returned at \$5,182,398, and last year it was \$8,939,479. The increase of the whole property of whites and colored citizens from \$234,959,548 to \$341,504,921 is in the ratio of 45½ per cent. The colored citizens' property therefore has increased one and five-eighths times as fast as that of the average citizen. The Comptroller-General remarks that these figures make a good reply to those who insist that the negro is oppressed in the South.

The chief point of contention in the flint-glass strike in Pennsylvania is on the subject of apprentices. The manufacturers desire to be at liberty to take as many apprentices as they choose to employ; the workmen want the number limited. A compromise is proposed by raising the limit suggested by the workmen to a number satisfactory to the manufacturers.

Building in New York is at a low ebb. The statistics of the building department show that the drop is general throughout the city, the number of buildings proposed having fallen to 631, less than half what it was a year ago, and it is necessary to go back to 1884 to find a lower total. The estimated cost runs down as well. A year ago it was proposed to put over \$22,000,000 in buildings; this year the total does not reach \$10,000,000. The description of the buildings proposed for erection shows that flats and tenements hold a very large proportion, 254 being in that category, while of private dwellings there are 91. Four big office buildings foot up to \$1,000,000 total cost.

A rumor from the City of Mexico says the proposed railroad across the Isthmus of Tehuantepec is to be built by an English syndicate, loans for this purpose to be issued by the Government at par.

Dr. Charles M. Cresson, analytical chemist of the Board of Health; Thomas Shaw, mechanical engineer and inventor; William D. Marks, professor of dynamical engineering in the University of Pennsylvania, and Jacob Naylor, iron founder, have been appointed by the court in Philadelphia as experts to examine and report upon the Keely motor. Two of the experts, Dr. Cresson and Professor Marks, it is reported, were the choice of the judges, Mr. Shaw the choice of Bennett C. Wilson, who claims the Keely motor, and Mr. Naylor the choice of Mr. Keely. The decree orders Mr. Keely, within 30 days, to exhibit to these experts, Mr. Wilson, the complainant in the case, and his attorney, "the inventions, machines or devices known as 'the Keely motor.'"

Lumbering on the Penobscot this season has been quite successful, the cut of logs comprising at least 150,000,000 feet, but operations on this river have fallen off one-third within 15 years, and the big pine forests have disappeared, leaving the spruce, which is practically inexhaustible.

Supervising Inspector Luddock, of San Francisco, having reported to the Treasury Department that petroleum is not safe fuel for large boilers, has been instructed by

Secretary Fairchild to withdraw all such permits heretofore given, except in the case of small steam launches.

The Chilean Government advertises for proposals for the construction of 800 miles of railroad in that country, of course requiring, incidentally, rolling stock and supplies on a large scale, as the approximate cost of the work is estimated at \$17,000,000. Contractors and capitalists are on the alert.

In a debate in the Massachusetts Legislature last week it was stated that there were 17,000 children below the age of 14 years employed in the work of manufacturing in that State. This accounts in part for the large amounts accumulated in the savings banks.

Free ships and bounties are subjects again under discussion in Washington, and the latest intelligence favors the success of the former and the defeat of the latter. The House Committee on Merchant Marine and Fisheries, on Friday, by a vote of five to four, authorized an adverse report on the Cummings bill providing for the payment of a bounty of 30 cents per registered ton for each 1000 miles sailed to all vessels built and owned wholly in the United States engaged in the foreign trade. The same committee authorized a favorable report on the Dunn bill, making it lawful for citizens of the United States to buy vessels built in whole or in part in any foreign country, import them free of duty or other charges and have them registered as vessels of the United States, and to be entitled to all the rights and subject only to the same regulations as vessels built wholly within the United States. It provides, further, that all or any part of the materials necessary for the construction and equipment of vessels to be built and furnished in the United States after January 1, 1889, may be imported in bond, and upon proof that such materials have been used for such purpose no duties shall be collected or paid thereon. An amendment to this latter bill, adopted by the committee, provides that after these vessels have been registered as vessels of the United States they shall not engage in the coasting, river or lake service. The Democratic members all voted for free ships, and all, except Mr. Cummings, of New York, voted against bounties. The Republican members will make minority reports against free ships and in favor of bounties. It is hardly conceivable that a measure so radical as the free-ship scheme will receive the sanction of Congress.

The ocean passenger traffic is becoming quite brisk, but freight rates are miserably low, so that the offer has been made to carry grain for nothing, simply to "trim ship."

Fully 5000 brewers have been locked out in New York and vicinity, the managers expecting to engage new workmen in sufficient number who are non-unionists.

Venezuela has notified her consuls abroad that the Government has resolved forcibly to defend her boundary from the alleged encroachments of England.

Before the Enchantress and the Phantom disappeared, during the recent blizzard, there were 23 New York and 7 New Jersey pilot boats, owned by 133 New York and 50 New Jersey pilots. Each pilot is appointed by the commissioners after three years' apprenticeship, part of which is spent in rowing the boats' yawl to and from vessels, and part in taking care of the boat and acting as her skipper. He must pass an examination before he is allowed to try his hand at bringing in or taking out a ship. Then he serves two years on probation, and if he gets along all right he is then made a full-fledged pathfinder. The pilots who own a share

in the boats—and nearly all of them do—earn a good living. Nearly all of them have a sixth interest in the boat they sail on. They are paid for their work by the foot. The charges vary according to the draught. For a ship that draws from 21 to 28 feet they get paid \$4.88 a foot, and for one that draws from 6 to 13½ feet they get \$2.78 a foot. These rates are increased 7 per cent. in winter.

Professor Torrey, of the Assay Office, in this city, advocates the construction of a new building, preferably near the Battery, which could be used jointly for the appraiser's stores, custom-house, sub-treasury and assay office. The old building is dark, contracted and unstable.

The old bonanza towns in Pennsylvania where the oil wells are located are said to be losing their population, in consequence of the shut-down to check production.

The supervising inspector of steam vessels at San Francisco, having reported that petroleum is not safe fuel for large boilers, has been instructed by the Secretary of the Treasury to withdraw all such permits heretofore given, except in the case of small steam launches.

Philadelphia is much agitated by plans for the new Reading Railroad terminal arrangements in the heart of the city, of which an elevated railroad is the principal feature. Several million dollars will be expended on the structure for ironwork and steel rails, and large quantities of anthracite will be consumed in the preparation of these materials.

The Philadelphia Record says: It is claimed that the Dominion of Canada awarded the contract to build a bridge over the Frazer River, on the Canada Pacific, to contractor Onderdonk at \$1,500,000, who sub-let the work to a firm of this city for \$400,000, which in turn let the job to another contractor for \$100,000, who let it for \$75,000, at which figure the bridge was built.

Thirty million tons of coal and 6,000,000 tons of coke were mined in Pennsylvania last year. The coal mines of this country furnish employment for 273,000 persons. In Pennsylvania's anthracite fields 110,000 persons are employed, and 52,000 in the bituminous beds. In Illinois 26,000 persons are at work in the mines, 24,000 in Ohio, 7500 in Indiana and 6000 in Maryland. The imports of bituminous coal have increased from 653,000 tons in 1881 to 906,640 in 1887, and the exports from 191,038 tons in 1881 to 643,563 tons in 1887. The imports are mainly received on the Pacific coast.

The St. Lawrence River shows signs of breaking up.

The Ottawa Government will continue last year's regulations with respect to American fishing vessels until the fishing treaty is ratified by the Dominion Parliament. The *modus vivendi* will then go into effect.

The experience of those who have endeavored to use petroleum for fuel in raising steam varies considerably. The Union Steel Company, of Chicago, report very satisfactory mechanical results at their works, in which petroleum has been used under the boilers for almost a month. Its chief excellence is said by them to be its uniformity of heat, keeping up a perfectly regular supply of steam with an entire absence of foaming. The commercial results are as yet undetermined. After a full month's run a fair comparison with the cost of coal firing can be made. In some other Chicago manufacturing establishments, however, the attempts made to introduce oil for fuel have not been attended with such success. One company intro-

duced and abandoned it twice in the past four months, with damaged boilers each time as the result of an uneven flame. Different burners were used with equally unsatisfactory consequences. Those who have suffered loss through these experiments warn their fellow-manufacturers against the use of burners which have not been thoroughly and conclusively tested, and are recommended by persons of high standing who have personal knowledge of the facts.

Waste in the Basic Open-Hearth Process.

M.M. E. de Gachter and L. Camperdon have contributed to *Le Génie Civil* a paper on the waste of metal in the basic or neutral open hearth as influenced by the recarburizing, which brings out some points worthy of notice. They discuss at length the theoretical considerations involved, and quote the following analyses of steel and cinder:

Analyses of Steel.

	Carbon.	Silicon.	Manganese.
A { Before final addition..	0.076	0.047	0.075
During casting.....	0.090	0.037	0.35
B { Before final addition..	0.120	0.014	0.140
During casting.....	0.150	0.014	0.371
C { Before final addition..	0.100	0.004	0.100
During casting.....	0.133	0.013	0.325

Analyses of Cinder.

	Pro-oxide of iron.	Per-oxide of iron.	Total iron.	Manganese.	Silica.
A { Before final addition.....	17.44	3.95	13.31	3.35	15.3
During casting.....	15.12	1.3	12.72	9.15	14.0
B { Before final addition.....	12.39	1.83	11.00	6.05	21.70
During casting.....	9.21	1.88	8.36	10.62	20.70
C { Before final addition.....	17.45	5.09	17.20	8.81	15.60
During casting.....	14.08	3.14	13.20	10.60	15.40

The final additions for A were 145 kg. of 60 per cent. ferro and 30 kg. of ferrosilicon, with 9 per cent. silicon; for B, 140 kg. of 60 per cent. ferro, and for C 182 kg. of ferro and 40 kg. of ferrosilicon. The figures in the analyses show that there was a notable reduction of iron from the cinder, as the result of recarburization, thus lessening the waste. By theoretical considerations they reach the conclusion that this is due principally to manganese, and that the aim must be to avoid, as much as possible, excessive oxidation of the bath and produce as little cinder as possible.

As of current interest, we publish below a table giving the chief dimensions of notable Atlantic steamships. It illustrates in a striking manner the progress in marine architecture during the last 50 years, and affords opportunity for interesting comparisons:

	Built.	Tons.	Length.	Beam.	Depth.	Proportion of beam to length.	Proportion of depth to length.
*G't Western	'35	1,340	212.3	35.4	17.2	5.99	9.15
*G't Britain	'41-3	3,500	274.2	48.5	21.5	5.68	8.70
+City of Glasgow.....	'50	1,600	277	32	24	7.09	9.45
+Britannic.....	'74	5,004	455	46	34	9.89	13.88
+City of Berlin.....	'75	5,491	488	44	36.2	11.90	13.46
+Gallia.....	'79	4,809	430	44	36	9.77	11.94
+Arizona.....	'79	5,147	456	45	37.7	9.96	12.00
+S-rvia.....	'81	7,392	515	52	40.7	9.90	12.62
+Alaska.....	'81	6,932	500	50	39.6	10.0	12.63
+City of Rome.....	'81	8,141	546	52	53.4	10.5	9.29
+Aurania.....	'82	7,269	470	57	39	8.24	12.15
+Oreg n.....	'83	7,375	500	51	39.7	9.25	12.57
+America.....	'84	6,500	432	51	37.5	8.47	11.52
+Umbria and Etruria.....	'84	7,718	501.6	57.2	38.2	8.70	13.13
+Saele.....	'85	5,381	465	48	36.2	9.47	12.55
+Lahn.....	'87	5,661	465	49	36.5	9.48	12.83
+City of New York and City of Paris.....	'88	10,500	560	63	48	8.89	13.02

Note.—Those marked * were built of wood, † of iron, and ‡ of steel.

The Iron Age

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The Cure of Railroad Strikes.

Prof. A. T. Hadley made the cure of strikes on the part of railroad employees the subject of a recent address. His main points were that the relationship between excessive profits and wages was too obscure to become a basis for a settlement of the problem. Arbitration in like manner might help before the strike began, but not afterward, and in general was useless, because of no way of enforcing the decision. Extreme conspiracy laws would not be endorsed by public opinion. The remedy suggested by the speaker was a closer and better feeling between railroad officers and men; such a feeling as would come from security of employment, with promotion when deserved—in short, a permanent service such as we know exists on many of the English roads. To bring this about we must have railroad officers who are leaders of men, rather than leaders of dollars; who can cure some of the strike evils by preventing them; who know that a complaint suppressed is more dangerous than a complaint expressed.

The problem of strikes, as we know it in manufacturing life, is complicated by other factors when applied to transportation. The stoppage of factories is bad enough, but the stoppage of railroad traffic is worse and cannot be permitted. The transportation lines form part of our public service; their uninterrupted working is an industrial necessity for the whole country. It is impossible for us to admit for a moment that any body of men, on account of a real or fancied grievance, can take advantage of this necessity to stop the plow of business through its accustomed channels. On the other hand, the personal right of the employed to work or not, as he thinks best, cannot be disputed. Professor Hadley's suggestion about more permanent service and the right of promotion seems to the point. We often hear of the necessity of more secure tenure of office under government, but the public do not know how slight often is the tenure of a position upon railroads. Among minor officers and clerks every change of administration, or even of head of department, is often the signal for a clean sweep. Among artisans and laborers every one feels the necessity of getting all he can from the railroad, for the next day he may be discharged without reason assigned. If reasonable security of position could be promised, with hope for promotion, and a feeling of identification with the company be fostered, a long step would be taken. As it is now the old personal contact between officer and employee is gone and nothing has taken its place. Of *esprit de corps*—that sentiment which should make superintendent and brakeman careful of each other's interest—there is, unfortunately, little. If the wages question consists simply in this—"How little can we

get the men to take?" and "How much can we get the road to give us?"—there is an end of all peace, for such a position admits of no lasting solution. As the commerce of the whole country is dependent upon the railroads, we are right in demanding that all just means be employed to avoid the stoppage of traffic.

Other students of our railroad strike problem look to other methods. They tell us that settlements based upon good feeling are chimerical, and that while trying them there may be a stoppage of the business of the whole country. Plans are therefore proposed for the licensing of engineers, or for a sort of enlistment of employees for a definite time, as now in the army and navy. It should be observed in reference to these suggestions that they but put the problem further back. We should be compelled to include every class of railroad employee, and when the term of enlistment or license ran out we would have the same disputes as now. The vital defect in the plans proposed is that in disputes there is no authority to which both sides can appeal, and which has power to enforce its decrees. Under our present conditions we cannot ask the Government to interfere, and thus to meddle with matters not under its control as public business. Indeed the drift of the whole discussion toward a *quasi* control of our transportation facilities by Government must strike every thoughtful mind. This is what plans for licensing or enlisting must in the end amount to. Government ownership of railroads we sincerely hope may be far distant, but it is not the part of wisdom to shut our eyes to the fact that people more and more are looking to it as our only way out from our present difficulties. Our chance of escape from this issue lies with our railroad presidents, directors and managers. The first steps toward a better feeling between officers and men must be taken by them. No matter whether employees may be entirely in the wrong or not, or having a grievance may be wrong in stating it, the public have a right to look to our railroad managers as leaders by position for a careful study of the reasons for discontent and a prompt application of the remedy. If this help fails us, then at last we shall have to turn to the State.

The practice of "shopping" always increases as the prices of iron decline. It is a curious fact that this is so, but many consumers of iron whose profits are comparatively stable will go the rounds of an entire local market when prices are low to see who offers the greatest bargains. When prices are high many of these very people will not hesitate to acquire a fondness for a special brand and pay a little extra price for it. But in a time of depression a slight variation in price will turn them to the cheapest seller, although in their particular line of trade they may not be driven to practice such close economy. There is an almost irresistible inclination in the human heart to give an unfortunate brother another push downward, and this is too often illustrated in the purchasers of iron, who use every art in their power to secure still further concessions when the market is weak. Exceptions are occasionally noted to this rule. Purchasers of pig iron, of bar iron,

of plates, &c., sometimes send in their orders without inquiring as to price, believing that they will be placed on an even footing with other buyers, although they do not "shop." Confidence of this kind, we believe, is seldom, if ever, misplaced. The manufacturer or dealer who has such customers is proud of the fact, and treats them with special consideration.

Cutting the Bar Iron Card.

Considerable excitement was caused in the bar iron trade some weeks since, when a prominent Western manufacturer announced by circular his determination to cut the extras in two to all classes of customers. Since then other manufacturers have issued cards of the same import. They originated no new condition of trade by so doing, but merely made public the concessions which had until then been obtained by favored classes of purchasers. They were censured by numerous members of the trade for their action, partly because it was felt that a restoration of former card rates would be a matter of very great difficulty at any time in the future when that might seem desirable, and partly because the profits of jobbers and dealers would be seriously curtailed if half extras became the rule with the small trade. The former consideration is one that will probably regulate itself in case of any very considerable advance in the cost of manufacture, as no mill would feel so tied to a card rate that it would furnish extras at less than the difference in cost when business is brisk, and plenty of more desirable orders are to be had. An advance in extras would probably accompany an advance in the price of base sizes, just as the card of extras has been lowered in sympathy with the reduced base price. The second consideration is an important one in many parts of the country, more particularly in the sections remote from mills, and in which the distribution of iron is largely or wholly in the hands of merchants. This trade is very large, but it is a matter of doubt as to whether any considerable part of it would be affected by such a change, as the power to control prices and terms is not in the hands of the manufacturers but in those of the merchants.

Although it was thought at one time that a concession of half the extras was a very serious cut, in the light of more recent events that reduction has lost much of its significance. In one Western city sales have recently been reported at quarter extras. This was probably an exceptional occurrence, made by a mill or mills very hungry for orders or perhaps for a very good specification. But the fact must be borne in mind that when the market is in a drooping condition, as it is at present, the exceptional too often develops into the ordinary, and one low sale is merely the forerunner of many. How prevalent this very severe cutting of extras may be by this time the managers of mills and the customers thus favored only know, but the tendency seems more and more toward a flat price.

The extras on bar iron in previous periods of depression enabled many mills to derive a little profit from their operations which they could not otherwise have obtained. A mill running on ordinary

sizes alone dropped out of the ranks and left the contest to its competitors with a more diversified product. If they happened to be favored with a large order for some extra size they were lucky, as there is always an economy in continuous production. But the indications are now strongly in favor of the surrender of this last chance of profit, and the manufacturers of bar iron can blame only themselves for their unfortunate situation. They have regarded the list of extras much in the same light as a merchant looks at a staple article which he has bought very cheap and can afford to put forth as a "leader" to influence sales of other goods. Concessions in extras may often secure orders for iron, but the policy of making them is fatal to a profitable business. In this there is an important difference between a merchant and a manufacturer. The merchant's "leaders" bring him trade, perhaps greatly increase his sales, and consequently add to his profits, without in any respect injuring his business, while the manufacturer who gives away his only chances of making a profit gains a little increased business and blights his own future.

There is one compensation for this unsatisfactory condition of affairs. The more rapidly all profits are cut off in the manufacture of bar iron the more quickly will the production be cut down to the actual requirements of the market. When this takes place bottom will be touched. At that time the manufacturers may be able to establish a policy which will assure them better returns for their investments, their risks and their expenditure of energy.

The Course of Quicksilver.

During the last quarter of 1887 quicksilver fully participated in the general boom in metals, the advance in price being considerable. In London the January price last year of Rothschild was £7. 5/ per flask, and after some fluctuation March ended with £7. 2/6, declining to £7 in April, £6. 7/6 in May, and recovering to £6. 11/ in the middle of June. From that date a gradual advance took place to £6. 12/6 at the end of June, £6. 17/6 in July and £7. 5/ in August. Meanwhile the arrivals in England during the first six months of 1887 had reached 55,877 flasks, the re-export being 31,903 flasks, as compared with an import of 49,765 flasks during the corresponding period of 1886, when the simultaneous export reached as much as 39,996 flasks.

Usually the importation of quicksilver from Spain falls off after the month of August; at the same time advices from California did not encourage the belief that much of an increase of production was to be expected in that State during the year. Moreover, everybody was aware that gold and silver mining was everywhere proceeding with great vigor, especially silver production in Mexico. Indeed, the position of the market in August last year was such that all that was wanted at the time was a slight increase in the Chinese demand. The latter indeed came forward, causing Rothschild to advance the price to £7. 10, whence it improved to £7. 15/ in October, in order to reach £8 during the last week of November, wind-

ing up that month with a sudden jump to £9. 15/. In December the price was first fixed at £10. 15/, subsequently on December 12 at £11. 5/, but closing the year at £11. The general advance in metals under the impulse of speculation assisted materially in pushing quicksilver to such extreme rates; when, therefore, a reaction began in the general metal market after people got fairly into the new year there was a sudden drop to £9. 15/, since which time the declining tendency has made further headway, and on March 31st quicksilver had returned in the London market to £7. 12/6. The fact is that Californian production had proved to be larger than anticipated, being 33,760 flasks last year, against 29,981 in 1886 and 32,073 in 1885, the largest previous production in that State having been 60,000 flasks in 1880, and as many in 1881. On the other hand, the Almaden Mine of Spain produced last year a couple of thousand flasks more than the previous year, the 1887 product being 53,000 flasks, as compared with 51,000 flasks in 1886. In other words, during the last two years all the American mines taken together did not turn out over 63,741 flasks, while the old Spanish mine produced 104,000 flasks. The demand must have been good all last year, since the London stock on December 31, 1887, was only 40,000 flasks, being 10,000 flasks less than at the opening of the same year. The Austrian mines met with a ready sale for their product throughout last year and since. The new Russian mines at Nikitowka are too unimportant as yet to cover more than a portion of what Russia consumes, the latter country using a great deal in its Ural gold mines.

In San Francisco the January price last year of \$38.50 per flask remained steady until March, when a decline to \$37.50 was followed by a rise to \$40 in April; then the price gradually gave way to \$36.50 in August, recovered to \$38 in September, was stationary at \$37 in October and November, and rapidly rose to \$48 in December, since when the price has receded, first to \$45, and then to \$42. American quicksilver production shows the following changes at the various mines last year on comparing the output with that of the preceding year:

	1886. Flasks.	1887. Flasks.
New Almaden	18,000	20,000
Atena	3,478	2,880
Napa	1,769	2,694
Great Western	1,949	1,446
Sulphur Bank	1,449	1,490
New Idria	1,406	1,890
Great Eastern	735	689
Redington	409	673
Bradbury		800
Sundry mines	786	1,198
Totals	29,981	33,760

Quicksilver export from Spain during the last three years has fluctuated as follows:

1885.		1886.		1887.	
Kilo-grams.	Pesetas or francs.	Kilo-grams.	Pesetas or francs.	Kilo-grams.	Pesetas or francs.
1,014,489	5,074,445	541,417	2,707,070	1,335,281	6,676,405

The large increase in Spanish exports has probably precipitated the recoil in prices noticeable so far this year; at any rate quicksilver has been the only metal since the boom was inaugurated which has returned pretty much to where it stood at the outset of the great and unprecedented movement.

Migration of Industries.

As the center of population of the United States moves westward it becomes advisable in many cases for manufacturers to follow with their shops and factories. Of course there are some industries that may be located to advantage almost anywhere in the country, while there are others that must be conveniently placed with references to sources of supplies or particular markets for their products, as the case may be, if prosperity is to be attained. But, apart from such exceptions, which are numerous, there are a vast number of industries that are best located near by the center of population. This fact is pretty generally recognized by intelligent people, and as a natural consequence many Eastern manufacturers from time to time conform to this general law by moving their works to the West or establishing Western branches. This migration of industries is a subject that has never been carefully investigated, but a study of it would nevertheless prove both interesting and instructive, provided it were done in a thorough and unprejudiced manner. From the few instances that come within each one's experience it would be foolish to draw broad conclusions, but, notwithstanding this, each particular case carries with it some little instruction. The difficulties met with in transplanting a factory from the Atlantic Coast far inland are numerous, but it is said that one of the most troublesome features to contend with is the labor question. The expense incident to moving the machinery some hundreds of miles, or the cost of newly equipping a plant in a Western State, can be estimated with close approximation, for the proprietor has only to do a little figuring from easily obtained data. The loss due to the interruption of business can also be calculated with a fair degree of accuracy, and the probable prosperity of the works in their new location may be conjectured with some amount of certainty. With regard to labor, however, the wisest proprietor can make no reliable forecast, and this is particularly true where the workmen are of an intelligent order.

If skilled labor be employed at the factory in question the proprietor naturally prefers to carry his men with him rather than trust to luck to obtain the needed service in a new locality. Different plans are adopted for persuading the workmen to emigrate. Some employers offer increased wages, while others hold out inducements to the men in the shape of assistance of some sort in procuring homes for their families. The latter plan would seem to be the more advisable, for if properly carried out it ought to insure a colony of workmen permanently located in the neighborhood of the new factory. It is also reasonable to suppose that higher wages would be a sufficient inducement for workmen to emigrate, since their savings would be greater, which is a most important consideration in the eyes of an industrious workman. Experience has in many cases, however, proved all this reasoning at fault. In dealing with inanimate objects prophecy is not difficult, but in attempting to foretell how a man or a body of men will act under certain circumstances there is no fixed basis for logic. The

workman born and bred in the East has a strong liking for his native soil, and he will not leave it without considerable urging, and even when safely transplanted he is apt to be discontented, and not unlikely will soon go home again. This at least has been the experience of more than one manufacturer who has carried his workmen into the West with him, only to have them dwindle away and go back to the East. The proprietor thus deserted has to pick up other men in a new country, which is a particularly bad thing to do when skilled labor is required. The trouble of finding new labor or transporting it is an important item to be considered by all who contemplate changing the location of their works. It is sometimes expedient to establish a second factory in the West without closing the Eastern one, and this plan has been tried successfully in more than one instance. Other things being equal, however, it is always more economical to concentrate work in a single establishment, not to mention the greater convenience of this, the usual arrangement.

The Steel Rail Trade.

The unexpectedly favorable showing of tracklaying in the first quarter of 1888, brought out by the statistical inquiry of the *Railway Age*, of Chicago, gives rise to the question whether in reality the position of the steel rail trade is as unfavorable as the tone of all reports, and of the makers themselves, would lead us to believe. The *Railway Age* prints a report which shows that in 28 States and Territories 54 lines have laid 1096 miles of track, against 1040 miles last year. In 1887 we built 13,000 miles of railroad, so that the authority quoted states: "If the history of previous years can be taken as a guide, the figures for the first quarter of 1888 indicate that the railway construction of 1888 will amount to from 8000 to 12,000 miles." In the course of the same article 8000 miles is not considered an extravagant estimate as a minimum. To corroborate this opinion the *Railway Age* has compiled a summary, showing that nearly 700 different roads are projected or in progress. These facts certainly indicate an unexpectedly favorable state of affairs, were it not for some circumstances which appear to effect the conclusions naturally drawn, so far as they affect the rail trade. Just about one-half of the new mileage built thus far this year is in the South, and the greatest activity in construction is going on now there and in Southern California. In other words, since new work is proceeding in those sections of the country where the climate allows of construction during the winter, the record of the first three months may prove deceptive.

The great roads of the Northwest and Southwest which extended so rapidly last year are not likely to repeat the record in 1888. Their finances are not in the condition now to warrant fresh additions of mileage; indeed, it will take some time before the capital outlays of the past year begin to return an adequate income. For some time to come the new extensions threaten to strain the resources of the parent lines, whose net returns they dilute considerably. Either this, the general

impression, is correct, or the lines referred to have been holding back rail orders systematically and by arrangement, expressed or implied.

The facts, so far as regards the steel rail mills, are these: On April 1st, 1887, the sales for 1887 delivery of the rail mills acting in concert aggregated 1,494,384 gross tons. At the corresponding date of the current year the sales for 1888 delivery amounted to only 658,513 gross tons, or considerably less than one-half. The shipments of the rail mills during the first three months of 1887 were 389,532 tons, while up to the 1st of April, 1888, they footed up only to 184,580 tons. In 1887 the sales had been made for delivery far into the year. Now there are very few contracts on the books of the mills beyond July 1. A few figures will best illustrate the situation. In the first three months of 1887 the trunk lines, including the Baltimore and Ohio, Erie, Pennsylvania, New York Central, Lake Shore and Michigan Central, had placed orders aggregating 115,277 tons. This year they have closed for 108,257 tons, so that practically this group, using rails for renewals almost exclusively, have purchased the same amount. The situation is very different in the West. In 1887 the St. Paul, Atchison, Topeka and Santa Fé, Chicago, Burlington and Quincy, Chicago and Northwest, Chicago, Rock Island and Pacific, Chicago, St. Paul, M. and Omaha, Chicago and Alton, Illinois Central, Wabash, Missouri Pacific, Union Pacific and Northern Pacific together had by April 1st ordered 583,248 tons. Thus far all these great roads put together have only taken 102,110 tons, an amount for which two alone had each been booked a year ago. This alone represents a falling off of nearly half a million tons. The detail figures show unmistakable evidence of the withholding of needed supplies, but on the other hand it must not be forgotten that the roads named took considerable quantities in addition to those ordered earlier in 1887. Will the demand withheld amount to much more than the quantity thus taken in 1887, and how far will the requirements of the South compensate for the falling off in the West and Northwest? We have some data on this point. Thus far the leading contracts for the Southern States in 1887 have footed up to 84,795 tons, as compared with 106,558 tons last year; but sales have since been made which probably fully cover the difference, and the inquiry from that section of the country is comparatively lively. There can be no doubt that in the aggregate the total consumption of the South will be much heavier this year than it was in 1887, but whether it will seriously influence the situation remains to be seen.

So far as can be judged now the falling off in the demand for this year will foot up to 400,000 to 500,000 tons, and that figure is indicated, too, even should the new mileage be 8000 this year, as against the last, with 13,000 miles. As we have shown, this is due chiefly to a decline in the territory west of the Mississippi and east of the Rocky Mountains. The most important fact brought out, however, is that, apparently, the full effect of the dearth of orders has already been felt; that the next three months are likely to bring a heavier business than the corresponding period of last year. The rail mills are behind 1887 in their orders to the

extent of about 850,000 tons. The probabilities of track mileage indicate a probable aggregate of 8000 miles, which would correspond to a falling off of about 500,000 tons. Provided renewals are equal in quantity, which the position of the trunk lines indicates, there has been an apparent withholding of orders all over the country of at least 350,000 tons, when the fact is taken into consideration that our railroads are buying only few foreign rails, comparatively speaking. The situation is not, therefore, as grave by any means as the discouraging reports from the Northwest railroads and the returns of the Board of Control would at first sight indicate.

A strong effort is being made by those interested in the Vermilion iron ore district to seek an outlet for a part of the product east of the Allegheny Mountains in competition with foreign ores. Thus far two large contracts have been placed, both of them with rail mills, one of which is controlled largely by the same interests which acquired the Minnesota mines last year. It is reported that docks are being built at Buffalo to handle the ore, and that the railroad chiefly interested in the traffic has given orders for the building of a number of boats. As yet, so far as we can learn, no other sales have been made to furnaces in New York or in Eastern Pennsylvania. At best, under existing circumstances, the volume of business done at so great a distance does not appear to possess much promise of rapid growth. The rail haul from Buffalo to Eastern Pennsylvania points is probably not less than \$1.25 to \$1.50, and added to lake freights and price of ore must make the total cost at furnace 10 to 11 cents a unit at the lowest. The advantages of such an ore movement would be to the miners the aid it would afford in disposing of a large tonnage, thus reducing general costs, giving fuller employment to its own railroad terminal facilities. To the anthracite coal road it would secure a fixed return freight movement independent of the fluctuations of the lake traffic itself. To the furnaces it opens a new source of supply, while it invades territory in which foreign material has been making headway quite rapidly during the past few years.

A press dispatch from Lima, Ohio, dated the 13th inst., says: "The Standard Oil Company are completing arrangements to commence work on the pipe line to Chicago. A complete line of the survey has been finished, and makes the line 208½ miles long. It follows the Chicago and Atlantic Railroad track the entire distance, with the exception of about 12 miles, in which a cut-off of that distance is made and several miles of pipe are thus saved. Pipe is being distributed along the line, which will be divided into four sections, and in less than 60 days oil will be pouring into the large reservoirs at Englewood and thence distributed through the city among the furnaces, foundries and steel works for fuel. The pipe is being distributed west from this city, while another gang of men is working east from Englewood. The line from the Cygno and Findlay oil districts to this city has been completed. The Watt Farm, near this city, will be the main pumping station. The boiler-houses are being built. The pumps for forcing the oil will be four in number, being distributed along the line at equal distances. Several hundred men are in the city to work on the construction of the line, active work upon which will be commenced next week."

CORRESPONDENCE.

The Population of the Pacific Coast.

DENVER, COL., April 10, 1888.

To the Editor: In your issue of the 5th inst. you quote the population of the Pacific Coast taken from the San Francisco *Commercial Herald*. A few errors are very pronounced: Firstly, no figures are given for Wyoming Territory, which has recently increased its population with wonderful rapidity, and now numbers about 80,000 to 90,000 souls. Secondly, the population of Colorado is set down at 250,000. The Denver City directory alone gives 33,800 names. Only counting three persons to each name gives over 100,000 souls to this city (within the limits). Pueblo contains not less than 35,000. Leadville, 18,000; Trinidad, 10,000, and a good many other towns from 3000 to 6000 inhabitants each. Colorado to-day contains fully 500,000 souls, fixed population, in addition to which there is a floating population of fully 75,000. Thirdly, New Mexico is underestimated fully 50,000. The next census will show at least 5,000,000 of people in the mountain and Pacific Coast States. The enormous area of the coal and iron ore fields and limestone deposits will enable iron and steel works to furnish employment to thousands of persons in the State of Colorado and Territories of New Mexico and Wyoming. It is in this feature particularly that the value of obtaining a true estimate of the exact population of this newly settled country can best be calculated. Readers of *The Iron Age* may safely calculate on a Pacific Coast population of 3,500,000 to-day, increasing at the rate of 20 per cent. per year, for several years to come.

Yours respectfully, E. H. SALTIEL.

The Copper Situation.

To the Editor: The volume of our business has been materially reduced by the rise in price of copper and by reason of the general opinion of consumers of our goods that the advance is arbitrary and beyond reason; therefore, from the operation of natural laws it must be of brief duration, and also the consequent necessity for substituting cheaper material than copper or brass in cases where the use of them has been induced by the low prices prevailing for several years.

The prices of manufactured goods have not kept pace with the rise in copper.

The length of time the present or higher price can be maintained is measured merely by the financial strength (which is said to be great) of the combined force that now controls it. The grace and judgment only of that force prevent the price at the moment from being 25 per cent. higher. In the end the price must largely recede, and those (ourselves) to whom copper is the chief of raw material will be the chief and heavy sufferers. Finally, while in some particulars, and after prices of manufactured goods are more nearly adjusted to high-priced raw material, there is more chance for profit to a manufacturer, such profit will, at most, but mitigate in some degree the inevitable disastrous end. Previous to this combination copper was too low in price. The world would have submitted to a fair advance; the world will contest to the end what they justly regard as a brutal extortion.

CONNECTICUT.

Economy in Fuel.

CLEVELAND, OHIO, April 12, 1888.

To the Editor: There is an old rule that an average return-flue boiler will consume about 4 pounds of coal per H.-P. per hour. Superintendent Scott, of the Shenandoa Yarn Mill, at Utica, N. Y., has made a study of the fuel question, and

has succeeded in reducing the amount of coal to 1½ pounds per H.-P. per hour. The boilers used are return-flue, 6 x 16 feet, three in number, and two Corliss latest improved engines, 350 H.-P. The fuel is a mixture of three parts anthracite dust to one of soft coal. The building is warmed by steam. Can any one make a better showing?

F. L. J.

Bloom, Billet or Slab?

CLEVELAND, OHIO, April 12, 1888.

To the Editor: The terms bloom, billet and slab are so mixed in their different applications that it would be impossible for a tariff committee to make a different class for each one. Some of the names for the above three articles could even be extended so far as to intermingle with the term "bar iron;" for instance, a size 7 x 7 inches would probably be called a bloom, but 5 x 5 inches, 4 x 4 inches, 2 x 2 inches, or even 1½ x 1½ inches, might be called bloom or billet, depending on whether a blooming mill or a billet train produced it; a size 1½ x 12 inches would possibly only be called a slab, but a slab 3 x 6 inches could be called bloom or billet as well. If almost any of these were long enough, and finished enough for a certain purpose, it might also be called a bar. Who, for instance, could tell whether a lot of iron or steel 2 x 4 inches, and 6 or 8 feet long, should be called blooms, billets, slabs or bars? It would depend entirely upon the parent mill and the finish and purpose it was made for. The best way would be to put them all in one class and apply terms broad enough to cover them all, so as to shut-out all loop-holes, which afterward, by special ruling of the respective departments, would, although the bill was framed with the best possible intentions, render it quite ineffective in result.

WIRE.

PITTSBURGH, April 12, 1888.

To the Editor: Our impression is that American practice is very well defined and sufficiently clear to avoid all ambiguity. A bloom is rolled or hammered from ingot and not less than 5 inches square. A billet is understood to be 4 inches square and smaller, or for many purposes round of same size. A slab is flat, wider than thick, and usually not less than 2½ inches thick. A bar—sheet bars, for instance—is 5 to 7 inches wide and 1 inch thick or less.

OPEN HEARTH.

Copper Exports and the Duty.

PITTSBURGH, PA., April 13, 1888.

To the Editor: In a recent editorial concerning copper speculation you ably defend the American tariff from the charge that it is responsible for the present corner in copper and resulting high price; but you seem to overlook the important part which is reserved for the American tariff to play in this connection in the very near future. You note the extraordinary export of copper from this country this year, notwithstanding the greatly decreased output of the Calumet and Hecla Mine, which has already made spot copper very scarce, according to recent trade publications. This scarcity of spot copper, in my opinion, is premeditated and brought about intentionally by the extraordinary export of copper from this country under existing conditions, the purpose of the Rothschilds' syndicate being to avail itself of the full benefit of the 4 cents per pound duty upon copper, as under their manipulations, owing to their contracts with American producers, they can readily maintain the difference between the American and foreign markets for copper to the extent of the entire American consumption during the next three years, solely for the benefit of the syndicate and its fellow conspirators.

This scheme should be frustrated by the immediate relegation of copper and copper

ore to the free list, and, fortunately for the copper producers of America, this may be done without injury to their interests while defeating the scheme of the conspirators to wrest many millions of dollars from the consumers of copper in the United States through the agency of a tariff intended for the protection of American copper producers. Fortunately, this protection is no longer needed, has not been availed of for years by the copper producers, and cannot be, under normal conditions, again for any legitimate purpose, as America is and has for years been a large exporter of copper, and has competed successfully and profitably with other copper producers in the markets of the world. The sooner, therefore, this useless prop is fully removed the better.

H. E. COLLINS.

Washington News.

(From Our Own Correspondent.)

WASHINGTON, D. C., April 17, 1888.

At the expiration of the morning hour Chairman Mills rose and asked unanimous consent to dispense with the special order, which was the consideration of an ancient Florida claim. Quite unexpectedly "I object" resounded over the hall. At first the members wore a startled expression, evidently supposing that it came from the Randall Democrats. Judge Kelly had just asked that the chairman of the committee be allowed unlimited time for his remarks. The objection, however, came from Mr. Hair, of Texas, who, seeing a Republican on his feet making a request, thought that it was naturally in order to object. When the subject was placed within reach of his comprehension he withdrew the objection amid rounds of laughter on both sides of the hall. Chairman Mills then took the floor, and opened the debate on the bill to reduce the revenue. What may be the end of this good-natured opening on that momentous question no one can predict. Mr. Mills introduced his argument by referring to the assertion that the present system of taxation was based upon the maintenance of an immense military establishment, which was no longer required by the interests of peace. He then went on to elaborate on that line of argument, and by sophistical reasoning and some sound logic rung the changes on the old story of tariff revision, tariff adjustment of duties, economic conditions, foreign markets, and the whole round of staple catch expressions in American politics which turn the finger-board of legislation toward free trade.

The speech of Chairman Mills was listened to with profound attention. Every Representative was in his seat. As the mouthpiece of the committee scheme of revenue reduction there was evident desire to hear his side of the question, as those who think with him will follow that line of argument in support of the bill, and those who differ from him will base their attacks upon an opposite line of reasoning. The debate on the side of the opposition was led by Judge Kelley, whose admirable argument was closely listened to. It is then proposed to have alternating speeches from both sides of the *personnel* of the committee. After that three score and ten or more statesmen will have a job lot of remarks covering divers phases of the question which they will wish to inflict upon the tympanum of the House.

The general discussion will last at least two weeks, and as much longer as the majority vote may determine. There is a lurking idea that when the time to go over to the five-minute rule is reached the first issue will be made by prolonging the speaking, and the bill may be talked to death. The most important feature is the fact that Speaker Carlisle has acceded to

the request of his friends to take a hand in the debate. He has also promised to render all the aid he can under the five-minute rule. His long experience in parliamentary affairs, and his success in a measure of this character in bringing it to consideration in 1884, have given him a prestige which the managers of the present bill wish to bring to their aid. The Speaker, however, will not take an active part until the subject is well under way. At least until it shall have passed the effervescent period of speech-making.

The main question which suggests itself to the masses of the people is as to the probable fate of the bill. Unless the Republicans and the protection Democrats combine to table the measure, or otherwise knock it out of time in a parliamentary sense, the bill in some shape will pass the House. It will doubtless be materially amended, but, as a rule, the Representatives on both sides are averse to adjournment without some action being taken. In this they feel themselves committed, as both parties have been harping in speeches and platforms for the past decade about tariff revision. Whichever party makes the effort will imagine that that fact may be used to advantage as a campaign cry. What the result may be will depend upon the direction of the effort and the verdict of the people.

The Senate will then have their turn. In that body the result would be as doubtful as in the House. There are many tariff revisers there also.

A Large Southern Iron Corporation.

A very exhaustive, and, from many points of view, highly interesting document is the report of the Tennessee Coal, Iron and Railroad Company to the stockholders, covering the business of the year ending January 31, 1888. The report of the president, Mr. Nathaniel Baxter, Jr., reviews the work of the company during the fiscal year, taking up one by one the six divisions. The three divisions in Tennessee are known as the Tracy, South Pittsburgh, and Cowan divisions, and the three in Alabama are designated as the Birmingham, Pratt Mines and Ensley divisions.

At Tracy City the business of the company is the mining of coal and making of coke for their own consumption and for the general market. At South Pittsburgh it is the making of pig iron and mining of iron ore for their own consumption and the mining of coal and making of coke for their own consumption and the general market. At Cowan it is the making of pig iron. At Birmingham it is the making of pig iron and burning of coke for the consumption of the Alice furnaces. At Pratt Mines it is the mining of coal and making of coke for their own consumption and for the general market. At Ensley it is the making of pig iron.

The Tracy City Division produced during the fiscal year 426,274 tons of coal, an increase over the previous year of 59,096 tons. Of this 257,685 tons of coal were converted into coke, and 168,685 tons sold in the open market, the profit on the business being \$94,709.31. At South Pittsburgh one of the furnaces was out of blast for a part of the time, the cost of relining and repairs being charged to current working account, while the outlays on the new furnace, No. 3, were added to capital expenditures. At the Inman ore mines, the product of which is consumed at the South Pittsburgh and Cowan, the output was 107,750 tons, and new openings and equipments have been added. The Thomas Mines, at Whitwell, were opened and equipped, but did not add to the revenue of the company during the year. The mine is the first development made in a

tract of 30,000 acres belonging to the company at that point, and 100 coke ovens are being built, of which 50 are nearly completed. The earnings of the South Pittsburgh Division were \$84,612.60, arising, as the report states, alone from the profits of the two furnaces. The Sewanee Furnace of the Cowan Division was in blast during the entire year, there being no extraordinary or capital expenditures, while current outlays were charged to working accounts. The profit of the business for the fiscal year was \$60,941.32. In the Birmingham Division No. 2 Alice furnace was out of blast five months for relining, the cost being charged to current working account, which left the profit on the business at \$182,315.29. On the Linn Iron Works, a portion of which were destroyed by fire, the loss being covered by insurance, the profits aggregated \$18,616.03. The most important division in many respects is that including the Pratt Mines, where from one extreme opening to the other the company now cover a frontage on the seam of about eight miles, there being on the line six slopes and two drifts, with two shafts in the field. This part of the property, to which 471 coke ovens were added, with 125 still building, earned profits aggregating \$185,721.75.

During the year the Tennessee Coal, Iron and Railroad Company disposed of their coal mine, known as the Helena, 18 miles from Birmingham, to the Eureka Company, of Alabama, for \$145,000, of which \$60,000 were paid in cash, and notes were given for the remainder, with lien retained upon the property. At the same time certain coke contracts existing between the Tennessee Company and the Eureka Company were canceled, and other contracts were made for the coke heretofore supplied to the Eureka furnaces with other concerns at a very considerable advance in price, as the company put it. The company disposed, also, of the right of way and other property, acquired with the object of building a dummy road, at a profit of \$138,000, while the sale of one-half of the shares held by the company of the Ensley Land Company, authorized at the last meeting, realized \$485,165, invested in the bonds of the Birmingham issue of the Tennessee Company.

The report of the secretary and treasurer, Mr. James Bowron, is very interesting as going into a number of details. The capital stock of the Tennessee Coal, Iron and Railroad Company is \$10,000,000, held by 319 shareholders, the treasury having unsold \$170,000. During the year bonds aggregating \$1,882,000 were retired, but on the other hand \$1,181,600 of the Tennessee Division were issued, leaving the reduction in bonds afloat \$700,400. On the other hand, there was a decrease in the securities of \$641,351.35, leaving a net reduction of the net bonded debt of \$59,048.65. The total net liability outstanding in bonds is \$5,065,798.88. The fixed charges for 1888 to be paid cash out of pocket are 6 per cent. on \$5,197,300, and 7 per cent. on \$1,015,000, making interest charges of \$382,888. Sinking funds call for \$71,000 more, but on the other hand interest is received on bonds held of \$14,340, leaving the annual interest charges \$439,548, or \$36,629 per month.

The capital expenditure shows an increase during the year of \$1,181,924.77, after deducting the decrease effected by the sale of the Helena mines and several minor credits to capital accounts. From October, 1886, to January 31, 1887, the capital expenditure was \$189,881.46. During the last fiscal year it was \$1,326,924.77, making an aggregate of \$1,516,806.23, which represents the outlay on the five new blast furnaces, on a very large number of coke ovens, the opening up of coal and ore mines, railroad extensions, rolling stock and land. The Ensley

Division, with its four new large furnaces, shares in this to the extent of \$677,631.39; the Pratt Mines Division, which is the chief coal and coke property, with \$499,357.39; the South Pittsburgh Division, with its new furnace, \$290,107.56.

The undivided balance brought forward from the preceding year was \$242,724.49. The profits of the year, of which we will speak more in detail, were \$765,376.39, making a total of \$1,008,100.88. After the payment of interest, and a dividend of 1 per cent., amounting to \$98,300, and the premiums on outstanding bonds refunded, there remains an undivided balance of \$404,747.38. This is not available for distribution, having already been used toward construction. It is recommended that it be carried either to reserve funds, or to depreciation account in the reduction of valuations on the property.

As before stated, the net profit of the Pratt Mines Division was \$185,721.75. The gross profit on coal was \$205,642.63. There was also a profit of \$13,578.85 on coke, \$13,657.72 on merchandise and store commission, \$7850.58 on rents, and \$9957.96 on railroad fares. The net profit of the Cowan Division of \$60,941.32 was made up of \$57,080.53 on pig iron; \$3218.81 on merchandise, and \$2589.09 on rents. The net profit of the Birmingham Division of \$200,931.32 was made up of \$189,462.25 on pig iron, \$3962.19 on store order discounts, \$1686.19 on rents, and \$8887.68 on royalty. The Tracy Division shows a net profit of \$94,709.31, shared by the coal mines to the extent of \$59,989.43; the coke ovens, \$38,335.04; merchandise, \$5045.97, and rents and privileges, \$2295.97. The net profits of the South Pittsburgh Division are placed at \$84,612.60, of which \$77,488.24 is credited to pig iron.

The year 1887 has certainly been for the Tennessee Coal, Iron and Railroad Company an important transition period, being one of exceptional expansion. The report does not submit any estimate of probable further capital outlays to carry to completion the work now under way. The company during the year completed their South Pittsburgh furnace, blown in on the 8th of March; two of their Ensley furnaces are completed, one being in blast now, the other to blow in in a few days, to be followed in 90 days by the third, while No. 1 will require considerably more time. The report states that contracts have been entered into for mining the ore for the Ensley furnaces from the company's property for a long term of years, and that freight contracts for its delivery to the furnaces give them the raw material at low rates. The expense incident to the opening and development of the ore mines has been borne by the contractor, the present estimated capacity ranging between 800 and 1000 tons. A dispatch received on Tuesday by the financial agency of the Tennessee Coal, Iron and Railroad Company in this city gives the earnings for March at \$56,900; deducting therefrom the coupon interest and sinking funds, monthly proportion, \$37,000, leaves net earnings of \$19,900. During February the gross earnings were \$45,300, the lower figure being due to the fact that during that month there were stoppages to make connection with the new furnaces at South Pittsburgh.

The general balance sheet places the bonded debt at \$5,126,098.88; bills payable, \$457,236.35; sundry creditors, \$363,622.90; unappropriated balance of profits, \$404,747.38. On the credit side are prominent investments aggregating \$4,731,013.41; stocks and bonds, \$242,050; real estate and land notes, \$21,626.60; sundry stocks on hand, saleable, convertible and consumable, \$297,153.55; sundry debtors on open accounts, \$441,276.68; and cash and bills receivable on hand, \$70,806.47.

TRADE REPORT.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, April 18, 1888.

The past week has witnessed no material change in the condition of the Pig Iron market. Sales of Scotch are still moderate, but values hold fairly steady in the face of that fact, and continued additions to surplus stocks. There has been less doing in Middlesboro' sorts, and the market is scarcely as firm as it has been of late. Best makes of Bessemer Pig remain very firm, as the production of the same is well under the control of orders. Spiegeleisen is held very steadily, but the transactions have been smaller this week than last. Old Material continues very slow, and prices are nominal, with a tendency in buyers' favor.

The quarterly meeting of the Manufactured Iron trade developed nothing in the way of new or particularly interesting features. Former list prices were confirmed and most reports on the condition of the market were of a hopeful character. However, the report has appeared that, owing to its products being superseded to a considerable extent by steel, the Coopers large Yorkshire Iron Works have been closed.

There is still considerable activity among the Steel makers, particularly in the Staffordshire district, but prices are somewhat irregular. The Staffordshire Steel Ingots Company are erecting a new batho-basis furnace. Bolckow, Vaughan & Co. have secured an order for 6000 tons of Steel Rails for the Swedish-Norwegian Railway Company.

The Tin Plate market has undergone no change. The volume of business continues to be comparatively light, but the position of supplies serves to steady values in a measure.

The Skinningrove Iron Company, Cleveland, are erecting a new plant for the reduction of ordinary slag to cement.

There has been more activity to the speculation in Tin and Copper, but the purchases for consumption continue to be very moderate, and supplies still accumulate. The Associated Smelters have advanced the price for Best Selected English Copper to £82. There have been no sales of American Matte or Precipitate since the 1st inst.

Scotch Pig.—The market steady, but demand moderate.

No. 1 Coitness, f.o.b. Glasgow.	48/
No. 1 Summerlee, " "	48/
No. 1 Gartsherrie, " "	45/
No. 1 Langloan, " "	46/
No. 1 Carnbroe, " "	41/
No. 1 Shotts, " at Leith.	46/
No. 1 Gtengarnock, " Ardrossan.	44 3
No. 1 Dalmellington, " "	40 6
No. 1 Eglinton, " "	39 3

Steamer freights, Glasgow to New York, 5/ @ 6/; Liverpool to New York, 7/6.

Cleveland Pig.—There has been less activity, but prices remain steady. No. 1 Middlesboro', G. M. B., 34/3; No. 3 do., 31/9.

Bessemer Pig.—The demand continues good and prices are very firm. West

Coast brands, mixed numbers, 43/6 @ 44/, f.o.b.

Spiegeleisen.—Prices firmly held, but business moderate. English 20 % quoted 75/, f. o. b.

Steel Rails.—The market steadier and a good business passing. Standard sections quoted at £3.17/6 @ £3.18/6, f. o. b. at works.

Steel Blooms.—Firm tone to the market and demand fair. We quote at £3. 16/3 for 7 x 7, f. o. b. at works.

Steel Billets.—Better tone to the market and business fair. Bessemer, 2½ x 2½-inch, £3.17/6, f.o.b. at works.

Steel Slabs.—Market remains quiet, with former prices current. Bessemer £3. 16/3, f.o.b. at works.

Steel Wire Rods.—Demand light and prices still rather weak. Mild Steel No. 6 quoted at £5. 10/, f.o.b. at works.

Old Rails.—No improvement in the demand; prices still weak. Tees quoted at £2. 17/6, and Double Heads £2. 19/3, c.i.f., New York.

Scrap Iron.—Very slow demand and prices weak. Heavy Wrought at £2. 5/ @ £2. 7/6, f.o.b.

Crop Ends.—Dull market and prices in buyers' favor. Bessemer quoted £2. 5/ @ £2. 7/6, f.o.b.

Tin Plate.—The market steady, with a fair volume of business. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	16/	@ 16/3
IC Bessemer steel, Coke finish	14/	@ 14/3
IC Siemens " "	14/	@ 14/6
IC Coke, B. V. grade	14/	@ 14/3
Charcoal, Terne, Dean grade	13/	@ 13/6

Manufactured Iron.—Market rather slow, and prices not so firm. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars	£	4	d.	£	s.	d.
Common " "	5	0	0	5	2	6
Bl's Sheet, singles	6	10	0	6	12	6
Welsh Bars (f.o.b. Wales)	4	15	0	4	17	6

Tin.—Very little change in the situation of the market. Straits closed at £166, spot, and £115, three months' futures.

Copper.—Business is still moderate; market lacks firmness. Chili Bars, spot, closed at £80. 2/6 @ £80. 5/. Futures, £77. 10/ @ £78. Best Selected, £82.

Lead.—Market steadier, with more doing. Soft Spanish, £13. 17/6 @ £14 at the close.

Spelter.—Prices again lower and trade moderate. Silesian, ordinary, £17. 10/ at the close.

Financial.

OFFICE OF THE IRON AGE,
WEDNESDAY EVENING, April 18, 1888.

Promptly responding to the authority conferred by Congress, the Secretary of the Treasury on Tuesday announced that on Monday, April 23, and daily thereafter, at noon, until further notice, proposals will be received in the office of the Secretary of the Treasury for the sale to the Government of the United States bonds of the acts of July 14, 1870, and January 20, 1871. The notice applies to both 4 and 4½ % bonds. The Secretary believes that small purchases daily will be less disturbing than larger amounts at longer intervals. He says that he has no definite plan as to the amount to be purchased or the prices to be paid. The assurance of easy money for some months to come is among the most favorable features of the week. Large amounts of railway mortgages have been taken in London and on the Continent, and there

is an expectation that European orders may continue for some time to come. This tendency, in conjunction with low rates of interest abroad, assists in the adjustment of foreign exchange while merchandise exports are at so low an ebb. On the other hand, the Boulanger troubles in France and the critical condition of the German Emperor are suggestive of future financial disturbance. Strikes have almost ceased to be an impediment to commercial activity, and railroad dislocations in the West and Northwest are less violent and harmful. The improvement is noticeable in the increased shipments of East-bound freight from Chicago for the week ended on Saturday, which amounted to 56,039 tons, against 54,375 tons during the preceding week, an increase of 1664 tons, and against 29,990 tons during the corresponding week of 1887. The Iron manufacturers of the Lehigh and Schuylkill valleys are making strenuous efforts to secure lower rates for the transportation of coal. They contend that at the rates now paid they cannot make iron at a profit, and are no longer able to compete with the Southern and Western furnaces. New rates for grain and provisions have been made in prospect of the opening of navigation by lake and canal. A Chicago letter says that at last the spring seeding season of 1888 is fairly under way; mild weather, and, in fact, very mild weather, in Minnesota and Dakota last week, rapidly took off all the snow.

Stocks have been generally stronger, as became more manifest to-day, the natural effect of the notice given by the Secretary of the Treasury of his purpose to buy bonds. On Thursday the market was influenced by lower prices in London for consols and Americans, and became steady on the news of the breaking of the deadlock in Congress. On Friday there was a better feeling and more activity. On Tuesday the action of the House in reference to bond purchases caused a further improvement, but an offset came in rumors of trouble in France, also concerning the health of the German Emperor. To-day the advance was checked by disquieting news from Europe.

Government bonds were in good demand, and the market was strong. Since the opening yesterday the 4½s have advanced ½ to 107½ and the 4s ½ to 124½. Quotations as follows:

U. S. 4½s, 1891, coupon	107½	@ 107½
U. S. 4s, 1907, coupon	124½	@ 124½
U. S. Currency 6s, 1895	121	@
U. S. Currency 6s, 1896	128	@
U. S. Currency 6s, 1897	125	@
U. S. Currency 6s, 1898	27	@
U. S. Currency 4s, 1899	129½	@

Sterling exchange to-day was higher.

The bank statement, for the first time in nearly three months, shows an increase in surplus revenue. On January 28 the banks held \$23,258,825 in excess of the 25 % legal requirement. From that time the decrease has been uninterrupted, the surplus on April 7 having been down to \$8,620,875. This week a gain of \$2,249,550 is reported, raising the excess to \$10,870,425. The increase in cash was \$2,964,300. The banks hold nearly \$6,000,000 more cash than a year ago, and their surplus reserve is \$10,870,425, against \$4,488,650 in 1887. According to the Custom-House report the exports of specie from this port during the week were \$578,876 and the imports \$81,847, making the totals since January 1 \$8,043,021 and \$3,962,195 respectively. The imports of merchandise at this port for the week amounted to \$11,229,000, and the exports for the same time were \$5,696,620. The items include 286,000 bushels of wheat, 16,000 bales of cotton and 6,359,000 gallons of petroleum.

The general markets are without radical change. Breadstuffs were firm; trading restricted by holders' views. Wheat is dull

and irregular at the recent advance and corn tends upward in sympathy. Refined sugars are $\frac{1}{4}$ ¢ lb higher. Large supplies of hogs at the West sent prices of provisions on the downward turn. Cut meats are more active. Coffee is rather firm for spot goods, but buyers are holding off for lower prices. Coffee is steady and in better request. Petroleum steady; export trading light. Freight rates by ocean steamer were at the lowest mark.

Thus the decrease in value of these principal classes of exports was no less than 26.2 per cent. Notwithstanding the decline in March, the total imports of merchandise at this port, exclusive of specie, for the nine months of the fiscal year, show a large gain over the previous four years, and with the exception of 1882 and 1883 are the largest in the history of the port. The returns from all the ports in the United States for the first eight months of the fiscal year show total imports equal to \$528,603,063 and exports amounting to \$528,681,535; balance, \$78,472. For the corresponding eight months one year ago the imports were \$498,797,350 and the exports \$535,268,318, showing a balance of trade in favor of this country of \$36,470,968. This striking change is sufficient to attract general attention, and the April returns, judging from the result at this port, will give a balance against the United States of nearly \$20,000,000.

The bill now pending in the Legislature, entitled "An act for the assessment and taxation of real and personal property and for equalizing taxation thereon," is looked upon by officers of savings banks and insurance companies as an attempt to reenact the principle of the law for taxing insurance premiums, which was repealed last year, after having remained a dead letter on the statute book since its enactment in 1880, and is strongly opposed.

A London correspondent calls attention to the success which Mr. Goschen has achieved in his gigantic operation for the conversion of the British national debt. Five weeks ago the Chancellor of the Exchequer announced that he proposed to convert the three classes of 3 per cents, amounting in all to \$2,790,000,000, into stock secured against redemption for 35 years, and bearing interest at 3 ¢ for one year, at $2\frac{1}{4}$ ¢ for 14 years and at $2\frac{1}{2}$ ¢ for 20 years, an average return of 2.61 ¢ per annum for the whole period. The option of conversion, except in special cases, expired on Thursday last, and at that time the conversions amounted to \$2,250,000,000, leaving only \$540,000,000 of the 3 per cents outstanding. On Friday notice of assent came in on \$115,000,000 of stock, bringing the conversions to a total of \$2,365,000,000, and reducing the amount of outstanding 3 per cents to \$425,000,000. The nearest approach to this achievement was made in 1844, when Mr. Goulburn, as Chancellor of the Exchequer to Sir Robert Peel, converted \$1,245,000,000 of $3\frac{1}{2}$ per cents in a single operation.

The new Consolidated Exchange building, conspicuously located on the corner of Broadway and Exchange place, was opened for business on Monday. The main floor has 10,000 square feet of space and is lighted through large arches on three sides, as well as from the roof. The rostrum, of chocolate and black marble, is on the Exchange place side, and the large blackboards used for the quotations are at the New street end. The oil pit is near the main entrance on Broadway, where are likewise the telegraph instruments. Around the walls are ranged the telephones. The hall has a gallery opening out of the mezzanine floor. The cost of the building is about \$400,000. For the New York tea trade a Tea Exchange is strongly advocated, mainly for the reason that "we have and can have no fixed standards of either quality or value."

New York.

American Pig.—The sales of the Thomas Iron Company are now stated to be in the aggregate about 126,000 tons. The market generally is quiet and easy, with reports of sales chiefly for future delivery at private terms of about 6000 tons of various brands of Southern Iron, which is readily available for early delivery at \$19.50 @ \$19.75, while for later delivery concessions are made. We hear less for the time being of pressure from the Shenango Valley and other districts in Western Pennsylvania. We quote standard to choice brands of No. 1 Foundry, \$20 @ \$20.50; No. 2, nominally, \$19 @ \$19.25, with concessions varying between 50 ¢ and \$1 for outside brands, and Gray Forge, according to quality, \$16 @ \$16.50, all at tidewater.

Scotch Pig.—There is a slightly better tone. We quote: Coltness, \$20.25 @ \$20.50; Summerlee, \$20.25 @ \$20.50, and Dalmellington, \$18.75 @ \$19.

Ferromanganese.—Quite a number of sales are being made in a small way at \$51 and a shade under, ex-ship.

Billets and Blooms.—There is some inquiry from the West for special sizes, but buyers' and sellers' views are about \$1 apart. During the week over 1000 tons were sold at about \$30 at an out port, but importers claim that since the rise in freights they cannot now do better than \$30.50, ex-ship.

Wire Rods.—There is an active inquiry, and some sales have been made, among them one lot of 1000 tons at \$41, ex-ship, early delivery. High freights and a scarcity of freight room are handicapping business, a considerable volume of which is in sight.

Bar Iron.—The market is weak and lower prices are being made. We quote Common 1.65 ¢ @ 1.7 ¢; Medium, 1.7 ¢ @ 1.8 ¢, and Refined, 1.8 ¢ @ 1.9 ¢, in carload lots on dock. Foreign Steel Merchant Bars are offered at 1.85 ¢ on dock here. Foreign Steel Hoops, cut to length, in bundles, are offered here at a shade under 2 ¢.

Plates.—Besides the demoralizing influence of offerings of foreign Steel Plates, a number of domestic mills offer Steel Plates at low prices, rolled from foreign Blooms. We quote, Iron Tank, 2.10 ¢ @ 2.20 ¢; Shell, 2.25 ¢ @ 2.4 ¢, Steel Plates, 2.25 ¢ @ 2.4 ¢ for Tank; 2.45 ¢ @ 3 ¢ for Shell, and 2.75 ¢ @ 3.25 ¢ for Fire-Box.

Steel Rails.—The demand for the present time is almost exclusively from the South, and sales aggregating about 7000 tons have been made for delivery in that section at private terms by Eastern mills. There are a good many inquiries from that quarter, but it is rarely that the financial arrangements are of such a condition that mills are willing to book the orders. From the West come reports of further weakening, which as yet has not been reflected by conditions in this market, which remains nominally \$31 @ \$31.50 for standard sections at Eastern mills. We discuss editorially the present situation of this trade.

Old Rails.—We note sales during the week aggregating about 5000 tons, among them 1700 tons of Double Heads on barge at \$21, with negotiations for a small lot still pending. The market continues irregular and dull. Small parcels continue to be offered freely at \$20.50 for Tees, and \$21 for Double Heads, and are difficult to place at that, buyers' views being generally considerably below the figures named. Larger lots are held at higher prices and the market here is being rapidly relieved of any pressing stocks. A lot of 600 tons to arrive next month at Philadelphia is being offered in this market.

We quote, nominally, Tees, \$20.50 @ \$20.75, and Double Heads, \$21:

Scrap.—Both domestic and foreign Scrap are weak, with little inquiry, and some small lots being pushed on the market readily available at \$19.

Track Material.—The apparent business is small. During the past week an order for 650 tons for a Mexican road, delivery at Corpus Christi, was taken by a Western mill on the basis of 2 ¢ for the Spikes at the mill. We quote: Spikes, 2.10 ¢ @ 2.20 ¢, delivered; Angle Bars, 1.8 ¢ @ 1.9 ¢; Bolts and Square Nuts, 2.7 ¢ @ 2.8 ¢, and Bolts and Hexagon Nuts, 2.9 ¢ @ 3 ¢.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, PA., April 17, 1888.

Pig Iron.—The market remains without any special change of feature, although there are indications of some reaction from the long-prevailing depression. There is more inquiry for stuff, and in many cases bids for large lots have been made, but mostly at prices somewhat below what sellers feel willing to accept. Still, there is a better demand, and the feeling tends toward activity and a larger volume of business, if not toward firmness in prices. The only actual change, however, seems to be in Mill Irons, which in some instances can be had at less money than a week ago. Southern No. 3, which was quoted at \$16 @ \$16.50, is now \$16 (with a bare chance of a trifle less on firm offers), while some Lehigh brands show a corresponding reduction, with \$16.50 @ \$17 quoted, as against \$17 a week ago. Foundry Irons are pretty steady, but in anticipation of certain reductions in cost it is not unlikely that a slight shading would be done if offers of the right kind were made. As a rule, however, buyers are not greatly concerned about the future, the idea being that in any event there is not much danger of an advance, and that if concessions should be granted now there is quite a probability that they will be equally available later on, so that it is not worth while to tie themselves up. This impression is not due so much to an expected falling off in consumptive requirements as to the belief that material reductions in cost will be made, which when announced will enable them to place orders to better advantage than can be done at present, although producers claim that they have already discounted the market in that respect. In concluding these remarks, it is only fair to say that the feeling seems to be more hopeful, notwithstanding the exceptions above noted, and the chances are reasonably favorable for better reports of the market from this time forward. Quotations ruling to-day may be given as follows: Choice brands No. 1 Foundry, tidewater delivery, \$21; Standard, do., \$20 @ \$20.50; No. 2, \$18.50 @ \$19, and Gray Forge, \$16.50 @ \$17; Southern Irons, \$19 @ \$19.50 for No. 1 Foundry, \$17.50 @ \$18 for No. 2, and \$16 for No. 3.

Foreign Iron.—There is more inquiry for Bessemer, and it is intimated that large lots could be placed on moderate concessions from the asking prices. Negotiations are in progress for 10,000-ton lots on the basis of \$19.75 asked, c.i.f., duty paid, with some prospect of business being closed for special brands. Spiegel nominal at \$27 @ \$27.50 for 20 ¢.

Blooms.—There is a fair demand for Steel Blooms, and if prices could be reduced about \$1 ¢ ton it is thought that some foreign business could be done, but prices abroad are firm, and with high rates of freight there is not much chance of business at present. Quotations are unchanged as follows: Foreign, at tide, c.i.f., duty paid, \$30 @ \$31 for Nail

Slabs; \$31.50 @ \$32.50 for 4 x 4 Billets, and \$35 @ \$39 for Siemens-Martin, price according to analysis, &c. Domestic Blooms: Steel, from \$30 to \$35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite \$44 @ \$45; Scrap Blooms, \$36 @ \$38 per "bloom" ton of 2464 lb.

Muck Bars.—There is not much business to report, as buyers are looking for lower figures, which cannot well be granted with Pig Iron at current rates. The usual quotation for good Bars is about \$29 at mill, although \$28.50 can be done in some cases, and even \$28 has been mentioned. The feeling is easy, and the market tends toward the lower figures above named.

Bar Iron.—Business is not any more satisfactory than during several preceding weeks. There is a fair demand, but competition keeps prices down to the bottom notch, and as yet without any indication of improvement. Prospects are rather favorable as regards the demand, and if cost can be reduced, as seems likely that it will be, the position of the manufacturers may perhaps be somewhat more tolerable, although the business is likely to be poor enough this summer. It is difficult to quote prices with exactness, as all depends on the kind of order and the necessities of those to whom it is offered. Ordinarily 1.9¢ @ 1.95¢ is quoted, but 1.80¢ @ 1.85¢ is nearer to selling prices, with special transactions at still lower figures. Skelp Iron is in demand at about 1.8¢, delivered, for grooved, but 1.85¢ is generally asked, so that business is held in abeyance for the present.

Plate and Tank Iron.—The market is extremely dull, with very few orders on the market, while old contracts are gradually being worked off. Prices are nominally unchanged; but anything large or important would doubtless be taken at specially low figures, as the mills are all anxious for work, and would compete very sharply for desirable orders. Asking prices about as follows: Ordinary Plate, 2¢ @ 2.10¢; Tank, 2.10¢ @ 2.15¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.3¢ @ 2.4¢; Shell, 2.7¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢.

Structural Iron.—Nothing of any importance coming on the market at present, although prospects for work in this line are considered fair. Mills are still busy on old orders, and have plenty of work for the present, although some of the departments are running a little slow. Prices are unchanged, and in most cases are about as follows: 2.10¢ @ 2.20¢ for Bridge Plate; 2.15¢ @ 2.25¢ for Angles; 2.7¢ @ 2.8¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

Sheet Iron.—There is not much demand, but prices are about same as last week. Prices for small lots are quoted as follows:

Best Refined, Nos. 26, 27 and 28....	3½¢
Best Refined, Nos. 18 to 25.....	3¼¢
Common, ¼¢ less than the above.	
Best Bloom Sheets, Nos. 26 to 28....	4½¢ @ 4¾¢
Best Bloom Sheets, Nos. 22 to 25....	4¢ @ 4¼¢
Best Bloom Sheets, Nos. 16 to 21....	3½¢ @ 3¾¢
Blue Annealed.....	2.8¢ @ 3¢
Best Bloom, Galvanized, discount.....	.60 %
Common, discount.....	.65 %

Steel Rails.—The market is dull, although prices in this market are steadily maintained. Reports from the West show some weakness there, hence a degree of hesitancy about placing orders here until prices become equalized. So far as we can learn nothing has been taken by Eastern mills at less than \$31.25, while \$31.50 @ \$32 is obtained for such lots as are mostly called for. Manufacturers express a good deal of confidence in regard to the future, basing their ideas on the ground that many orders have been held in abeyance pending a settlement of the tariff question,

&c., and that for the summer and fall trade a great many Rails have yet to be bought.

Old Rails.—The market is very quiet, and prices so unsettled that it is almost impossible to quote them with exactness. One sale was made during the week at \$21.50, f.o.b. cars, and while holders ask from that to \$22 for spot lots, it would be difficult to find a buyer at anything near those figures, unless for a special lot or under special circumstances. Nominally prices may be called \$20.50 bid and \$21.50 asked.

Scrap Iron.—There is not much doing in this department, and prices are very irregular. Carload lots sell fairly at quoted rates, but large lots would have to be shaded to attract attention. Asking prices about as follows: \$20.50 @ \$21 asked for shipments of cargo lots; \$21.50 @ \$22 for carload lots, and choice \$22 @ \$23; No. 2 do., \$14 @ \$15; Turnings, \$15 @ \$16; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$16 @ \$17; do. Borings, \$11 @ \$12; Old Fish Plates, \$26 @ \$27. Old Car-Wheels, \$17.50 @ \$18, Philadelphia, or its equivalent.

Wrought Iron Pipe.—A somewhat improved feeling is noticeable, and prices, while not virtually higher, are quoted with more firmness than for some time past. Several large orders have been filled during the past week, and prices realized have been quite satisfactory. Discounts are quoted as follows: Black Butt-Welded, 50 %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 50 %; Boiler Tubes, 60 %.

Nails.—Owing to the backward season country orders are slow coming in, and Nails for local consumption are ordered only in limited quantities. Price is quoted from \$2 to \$2.10.

Chicago.

Office of The Iron Age, 95 and 97 Washington St. Chicago, April 16, 1888.

No change of importance has occurred during the past week in any line. The volume of business is about the same as it has been, but prices seem to have touched a point at which they are inclined to stick until some new influence makes its appearance. A more hopeful feeling is manifested in many branches of the Iron trade as a consequence of the steadiness of prices, and encouraging phases of the business situation are again being discussed by those who were most disheartened a few weeks since.

Pig Iron.—The leading houses report a fair volume of trade with increasing inquiry, but the others have experienced almost a complete stagnation. The consumption of Iron in this vicinity is known to be of large proportions, but buyers pretty generally persist in their hand-to-mouth policy, as though they expected a further drop in prices. A few notable exceptions to this rule are found, but they are very few. They embrace large consumers whose yearly contracts will shortly expire, and who find it necessary to secure additional stock to carry them through to the usual contracting season, and some cautious purchasers who fear a sudden turn in the market and would like to have options for a considerable quantity as a safeguard. This class is too small to influence the market as yet. Bessemer Pig is firmer than it has been, owing to fewer offerings, and purchasers would have some difficulty in placing orders at the prices quoted two or three weeks since. Lake Superior Charcoal Pig is sympathizing with Coke Pig to some extent, and, while most of the leading makes are well sold up and are held at firm prices, others can be had at concessions. Quotations are as follows, for cash, f.o.b. Chicago: Lake

Superior Charcoal, all numbers, \$20.50 @ \$21.50; Alabama Car-Wheel, \$27; Southern Charcoal Foundry, No. 1, \$19.50 @ \$20.50; Jackson County Softeners, No. 1, \$19 @ \$19.50; Hocking Valley, Soft Foundry, No. 1, \$18.50 @ \$19; American Scotch, No. 1, \$19.50 @ \$20.50; Ohio Scotch, No. 1, \$18 @ \$19; Lake Superior Coke, No. 1, \$18.50 @ \$19; No. 2, \$17.50 @ \$18; No. 3, \$16.50 @ \$17; Southern Coke, No. 2, \$18 @ \$18.50; No. 2½ and Open Bright, \$17.50 @ \$18; No. 3, \$16.50 @ \$17; No. 1 Mill, \$16.50; No. 2 Mill, \$16.

Bar Iron.—Inquiries are a little better than last week, as parties who purchased heavily at the beginning of the year are now looking about with a view to renewing their supplies. Actual business, however, has been light. Mills making good common Iron are now trying to get 1.70¢, half extras, f.o.b. Chicago; but on large lots this price would give way under the keen competition for business at present existing. Store prices range from 1.80¢ to 2.10¢, according to quantity and quality.

Structural Iron.—Nothing worthy of note has occurred in this line. Angles are still held at 2.60¢, Tees at 3¢, and Beams and Channels, at 3.80¢, all from store. In carload lots Angles are quoted at 2.25¢, Tees at 2.55¢, Beams at 3.40¢, and Universal Plates, 2.35¢, f.o.b. Chicago, from mill.

Sheet Iron.—The constant stream of inquiries from large buyers leads manufacturers' agents to expect a large trade in Black Sheets when the season opens. Quotations for carload lots range from 2.95¢ to 3¢, f.o.b. Chicago, for No. 27, which is held at 3.35¢ from store for small quantities. Galvanized Iron is quiet, but small lots are still quoted at 60 % off for Juniata, and 60 % and 5 % off for Charcoal.

Plates, Tubes, &c.—An improved demand from store is reported, at the following prices: Heavy Sheets, Nos. 10 to 14, 2.70¢; Tank Iron, 2.60¢ @ 2.70¢; Tank Steel, 2.75¢ @ 3¢; Shell Iron, 3¢; Shell Steel, 3¢ @ 3.25¢; Flange Iron and Steel, 4¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 60 % @ 62½ % off on 2½ inch and larger, and 57½ % off on 2 inch and smaller.

Merchant Steel.—Trade is dull. Some of the local houses are feeling the effect of the depression in the Lake Superior Iron Ore trade in their diminished sales of Tool and Drill Steel for use at the mines. Quotations from store are as follows: Bessemer Bars, 2.45¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.25¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

Steel Rails.—A number of small sales were made during the week and negotiations are in progress for some large lots. Competition has been brisk for open business both among the local mills and between some of them and Eastern manufacturers, but one or two of the former have now temporarily withdrawn from the contest rather than contribute to the threatened demoralization. Prices vary according to circumstances, \$33 at mill being the rate on business originating in the West, while Eastern orders depend upon the extent of Eastern competition.

Old Rails and Wheels.—Several sales of Old Iron Rails have been made since our last report at prices ranging from \$20.50 to \$21. Increased inquiry is developing and an enlarged trade is indicated in the near future, especially as the supply is growing rapidly. Offers amounting to over 10,000 tons have recently been made to consumers and dealers from several Southern railroads. Old Steel Rails have also become more plentiful, and are

quoted at \$18 @ \$18.50, free from guards and frogs, or \$14 taken as they run. Old Car-Wheels are in demand at \$20.50.

Scrap.—Prices are still weakening, with a light demand and an increasing supply. Dealers offer \$12 @ \$13 for Mixed Country Scrap. Selling quotations of carefully selected are as follows: $\frac{1}{2}$ ton of 2000 lb: Railroad Shop or No. 1 Forge, \$19.50 @ \$20.50; Track, \$18.50; No. 1 Mill, \$14 @ \$15; Light Wrought, \$9.50 @ \$10; Horseshoes, \$19; Axles, \$25 @ \$25.50; Machinery Cast, \$15.50; @ \$16; Stove Plate, \$12; Cast Borings, \$9.50 @ \$10; Wrought Turnings, \$12; Axle Turnings, \$13; Coil Steel, \$14; Leaf Steel, \$15.50; Locomotive Tires, \$16.50.

General Hardware.—Jobbers in Shelf Hardware generally report their branch of trade in excellent condition. While the demand is not so strong as it has been, they still have all the orders they can fill comfortably with existing facilities. The sales of Builders' Hardware are especially heavy, and a very good season is anticipated in this line, as the prospect of labor troubles grows less.

Nails.—In the present condition of the Western market it would be well if manufacturers would call off their salesmen and shut down their factories as soon as they fill the orders now in hand. The large stocks laid in during the railroad war have to be worked off, and the process is now in operation, but it will take time. At some Western points jobbers are quoting prices considerably below what it would cost manufacturers to make deliveries there, but they are obliged to do this to stimulate a further movement in the direction of the consumer. Some well-informed Nail salesmen freely express the opinion that the Nail trade this season, so far as the West is concerned, will be controlled almost entirely by the jobbers. The outlook is, therefore, very unsatisfactory for manufacturers, and their efforts to sell will make it worse until the large stocks now in jobbers' hands are considerably reduced. Manufacturers' representatives have disposed of small quantities of Steel Cut Nails during the week, but at as low prices as those prevailing before the late advance. Wire Nails are also in slight request from first hands. Jobbers quote \$2.25 for small lots of Steel Cut Nails, with 10¢ off for carloads, but are selling small lots at the carload price when necessary to meet competition. They quote Wire Nails at \$2.85, with 10¢ off for small lots.

Barb Wire.—Jobbers report a fair demand at 3.25¢ for small lots of Painted, with $\frac{1}{10}$ ¢ off for carloads, and $\frac{1}{4}$ ¢ advance for Galvanized.

Pig Lead.—With a considerable inquiry, but very little active business, prices for carloads have dropped from 4.80¢ to 4.60¢. The supply is not large, but is evidently sufficient for present consumptive requirements.

Copper.—The demand for Sheet Copper has been very good now for a month. Prices are firm at 25¢ rates.

The offices of the Calumet Canal and Improvement Company, Chicago, Calumet Terminal Railway Company, and the Standard Steel and Iron Company have been removed to rooms 527 to 531 in the Rookery Building, Chicago. These companies are engaged in the development of the new manufacturing suburb of East Chicago.

W. S. Mallory & Co., Chicago, agents for the sale of Park, Bro. & Co.'s Steel Plates, have distributed among their principal customers some very appropriate Paper Weights made at the Black Diamond Steel Works. They are made of Open-Hearth Steel Boiler Plate, bent cold

in two folds and hammered flat without a sign of fracture. The folds are in their natural state, while the top, bottom and sides are nicely polished. The name of the makers is stamped on the side, together with a brief description of the Plate, which is closed at 60,000 pounds tensile strength. A knob of Park, Scott & Co.'s Lake Superior Copper is screwed in the top for a handle.

The stock sheet issued monthly by Joseph T. Ryerson & Son, dealers in Plate Iron and Steel, at Chicago, is a publication which is highly appreciated by users of Plates and materials that accompany them. It is of pocket size and consists of 24 pages, including the cover. The firm supply a flexible leather cover to their customers to protect the pamphlet from injury. The contents consist of a complete list of the Plates, Sheets, &c., in the firm's warehouse at the beginning of the month, with the exact measurements of each, by whom made, and all other essential details. Their stock of Rivets and Boiler Flues, Ulster Iron and Fillet Angles is also stated, together with a list of Stock Boilers, which will be found useful by small Boiler-makers. Tables of weights of Iron are added for the information of Iron-workers. The publication of such a work every month is a matter of considerable trouble and expense, but it has been found worth the pains and cost.

Nelson B. Williams, Western agent of the Hartman Steel Company, Limited, the Apollo Iron and Steel Company and the East Chicago Steel Works, announces by circular that increased business has compelled him to seek enlarged office accommodations, and he has, therefore, removed to rooms 659 and 661 in the Rookery Building, Chicago.

Cleveland.

CLEVELAND, April 16, 1888.

Iron Ore.—Charters have been made during the week for Ore from Ashland to lower lake ports at \$1.25 $\frac{1}{2}$ ton. This is a victory for the mining companies. Vesselmen have steadily maintained that the lake freight from Ashland would not be less than \$1.70. This was the rate paid for limited contracts at the beginning of last season, while the rate for contracts from the beginning to the close of navigation was \$2. Trip contracts at the close of the season of 1887 were made at \$3 from Ashland to Cleveland. The new charters were announced on Friday, and were confirmed by vesselmen themselves. It is said, however, that the \$1.25 rate is the lowest that will be made, and that charters for Ore from Marquette and Escanaba will not be proportionately low. It is now believed that substantial quantities of Ore will be sold before May 1. Furnacemen seem in no haste to purchase, but the mining companies will soon be able to name bottom figures for their Ore, and sales will quickly follow. The \$1.25 rate from Ashland is looked upon by Ironmen generally as fair to all concerned. It was made necessary by the depressed condition of the Pig-Iron market and by the determination of furnacemen to make no purchases of Ore except at great reductions from last season's quotations. The mine owners appreciated the situation, and were ready to make concessions when an assurance of lower freight rates had been obtained. The vessel owners have stubbornly maintained a policy of indifference, believing that they held the key to the situation. It has become apparent even to the lake carriers that unless reasonable rates were obtained by the mining companies no Ore would be shipped. A season of small profits seemed more desirable than a summer of idleness. Consequently a few vessels were offered at the rate named

above. Others will certainly follow, and season contracts are likely to be below \$1.60. Should the rates from Marquette and Escanaba be correspondingly low the mine owners and furnacemen can soon come to an understanding. It is believed that the output of Ore for 1888 will scarcely exceed 3,750,000 tons, the demand for Rails being very light in comparison with last year. It is reported that representatives of the Lehigh Valley are negotiating for a large quantity of Vermillion Ore for the use of the road. It will be shipped via Buffalo. Coke can still be bought at the ovens for \$1 $\frac{1}{2}$ ton.

Pig Iron.—The amount of Iron sold during the week was greater than for the preceding week, but prices are weaker. Valley Irons are quoted at a reduction of 50¢ $\frac{1}{2}$ ton. Some Lake Superior Charcoal Iron is being purchased at absurd figures. In the present unsettled state of affairs accurate quotations are almost impossible to obtain. The following are, however, f.o.b., cash, selling prices:

Nos. 1 to 6 Lake Superior Charcoal	\$21.50 @ \$22.00
No. 1 Strong Foundry, Bessemer quality, $\frac{1}{2}$ ton.....	18.50 @ 19.00
No. 1 Strong Foundry, $\frac{1}{2}$ ton.....	17.50 @ 18.50
No. 2 Strong Foundry, $\frac{1}{2}$ ton.....	16.50 @ 17.50
No. 1 American Scotch, $\frac{1}{2}$ ton.....	18.35 @ 19.35
No. 2 American Scotch, $\frac{1}{2}$ ton.....	17.35 @ 18.35
No. 1 Soft Silvery, $\frac{1}{2}$ ton.....	18.50 @ 19.50
Mahoning and Shenango Valley Neutral Mill Irons, $\frac{1}{2}$ ton.....	15.50 @ 15.75
Mahoning and Shenango Valley Red and Short Mills, per ton.....	16.00 @ 16.35

Old Rails.—Buyers are offering but \$21.50 for Old Rails. A few tons of Old Axles were sold at private terms.

Nails.—Iron Nails are in good demand at \$2; Steel Nails at \$2.10, and Steel Wire Nails at \$2.75 from store.

The strike at the Emma Furnace of the Union Rolling Mill Company continued but a week, the men agreeing to a reduction corresponding with the cut in wages in the Mahoning Valley. The employees at the Central Furnace of the Cleveland Rolling Mill Company are still out.

Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts., CHATTANOOGA, TENN., April 16, 1888.

General business all over the South remains very active in all lines of trade. The farmers are now hard at work putting in their crops, and the country towns are lacking the excitement that they generally enjoy through the winter. There appears to be no lack of interest in general manufacturing, and some new enterprises are taking shape which will be fully developed during the summer. The Lumber business of this particular district is now at its flood tide, as the upper rivers have had quite a long season of high water, and it is estimated that more than double the amount of Lumber will be shipped from this point this season than during any previous year.

Pig Iron.—There is not the encouraging aspect in looking into the future that we would like to report. While there is the same distinction still between good grades and favorite brands on the one hand and those that are considered inferior on the other, yet there appears to be a kind of lethargy prevailing that is anything but agreeable. There is this to say, however, about the Southern furnaces—there are no large amounts of good Irons accumulating in any of the yards. If there were much more of that kind made it would all move off rapidly. Some two months since a sample lot of 200 tons of No. 2 $\frac{1}{2}$ was sent to an Eastern point, and it resulted in a contract for 2000 tons being made last week of same kind, which netted the furnace, f.o.b., \$14.75, free from concessions. This figure is rather above the market, but the Iron was worth it compared with some other brands. Sales

of No. 2 at \$14 @ \$15, f.o.b., of some small lots are not infrequent, and prices range from those figures down to \$10 @ \$11 for White and other low grades. The amount of Pig that is being taken by our Southern foundries is showing a steady and gradual increase, and our furnaces are turning their attention more to supplying this source of consumption, as the orders, while not in such large amounts, are more steady in volume and regular in prices. Citico Furnace, which has been out for about two months, relining, will go in again in about ten days. The Dowling Furnace Company, of this city, have dissolved, and the project of building a furnace is abandoned.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, April 16, 1888.

Pig Iron.—The past week has brought no improvement to the local market, and there has been a decrease, rather than otherwise, in the volume of business transacted; at least there have been fewer large contracts closed. The aggregate sales of small amounts, however, have been considerable, and the prices realized, while reflecting no better feeling, show that there has been no retrograde movement. Furnaces which have Iron to sell are apparently anxious to place it before the dull summer months arrive, while buyers, seeing no immediate prospect for an advance either in Manufactured Iron or the raw material, are inclined to buy only from hand to mouth. A few large concerns, however, which have business enough ahead to encourage buying and recognizing the low prices current are desirous of securing a round amount of Iron, and one transaction involving upward of 20,000 tons will be completed or negotiations broken off on next Wednesday. The only sales made here during the past week which are worthy of special note are: 5000 tons No. 2 Southern Coke Iron at about \$14.75 per ton, cash; 1000 tons to be delivered in May, and 1000 tons in each of the subsequent four months. Other sales of Southern Coke No. 2 and Bright and Silvery, about 2500 tons in all, have been made at less than \$14.75 for No. 2 Mill and about \$16 for the other grades. A little stronger tone is reported for Charcoal Iron, but no trading of moment is reported. Prices current here for cash, with some little revision, are as follows:

Hot-Blast Foundry.

Southern Coke, No. 1.....	\$19.00 @ \$19.50
Southern Coke No. 2.....	17.50 @ 18.10
Southern Coke, No. 3.....	16.50 @ 17.00
Ohio Soft Stone Coal, No. 1.....	18.50 @ 19.00
Ohio Soft Stone Coal, No. 2.....	17.50 @ 18.00
Mahoning and Shenango Valley.....	19.00 @ 20.00
Hanging Rock Charcoal, No. 1.....	22.00 @ 23.00
Hanging Rock Charcoal, No. 2.....	20.00 @ 22.00
Tennessee and Alabama Charcoal, No. 1.....	19.50 @ 20.00
Tennessee and Alabama Charcoal, No. 2.....	18.50 @ 19.50

Forge.

Strong Neutral Coke.....	16.00 @ 16.50
Mottled Neutral Coke.....	14.00 @ 14.50
No. 1 Mill Coke.....	15.00 @ 16.00
No. 2 Mill Coke.....	14.50 @ 15.00

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	22.50 @ 24.00
Hanging Rock, Cold Blast.....	24.50 @ 25.50
Lake Superior Car-Wheel and Malleable.....	22.00 @ 23.00

Old Rails and Wheels.—There has been a more active inquiry for Old Rails, but Wheels have been quiet. The offerings of both, however, are light. Rails are quotable at \$20.50 @ \$21, and Old Wheels at \$20 @ \$20.50 per ton.

Nails.—The market has remained steady, with a fair jobbing demand for both Iron and Steel, 10 @ 60d Iron selling at \$2.10 per keg, and other sizes at proportionate rates. Steel sell at \$2.15 and Steel Wire at \$2.90 per keg.

Manufactured Iron.—The local market for Manufactured Iron has continued

dull, and an easy tone has prevailed, but prices are without quotable change. Bar and Sheet Iron—Common Bar Iron, 1.90¢ @ 2¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3¼¢ @ 4¼¢ per lb.

Rogers, Brown & Co. the local agents, report the blowing in last week of the first of the new Ensley furnaces, of the Tennessee Coal, Iron and Railroad Company. Telegraph advices report 140 tons No. 1 Foundry made in 24 hours.

Louisville.

LOUISVILLE, KY., April 16, 1888.

Pig Iron.—The market has held its own during the last week, and we have not heard of further decline. There has been considerable buying, and in one or two places where parties feel that the market is already low enough for them to make purchases for the year, some heavy sales have been made. During the past week there have been purchases to run through the entire year by several houses, which we consider a very encouraging feature. The parties buying think the market will probably go lower, but think it is not wise to run the risk of making purchases at the lowest figure the iron market may decline to, as there is danger of the market changing at any time, and they are satisfied to purchase at present prices. We hear of some transactions on the part of railroads where they desire rails for future use, who feel that now is an excellent time to make heavy purchases. When these sales become known we think they will have an excellent effect upon the market, and that the number of purchases for a year's delivery will increase.

Southern Coke, No. 1 Foundry.....	\$18.25 @ \$19.25
" No. 2 ".....	17.25 @ 18.25
" No. 3½ ".....	16.75 @ 17.75
Hanging Rock Coke, No. 1 Foundry.....	18.75 @ 19.75
Hanging Rock Charcoal, No. 1 Foundry.....	22.25 @ 23.75
Southern Charcoal, No. 1 Foundry.....	19.25 @ 21.75
Silver Gray different grades.....	15.75 @ 16.75
Southern Coke, No. 1 Mill, Neutral.....	15.75 @ 16.75
" No. 2 ".....	15.25 @ 16.25
" No. 1 " Cold Short.....	15.25 @ 16.25
White and Mottled, different grades.....	14.75 @ 15.75
Southern Car-Wheel, standard brands.....	21.75 @ 22.75
Southern Car-Wheel, other brands.....	19.75 @ 21.75
Hanging Rock, Cold Blast.....	22.75 @ 24.75
Hanging Rock, Warm Blast.....	19.75 @ 20.75

Detroit.

WILLIAM F. JARVIS & Co., Pig-Iron merchants, Detroit, report as follows under date of April 16: There has been very little change in the market since our last report. The volume of business is about up to the average, but very few orders are being placed, the majority of consumers still preferring to buy only for their immediate wants. Some furnaces are having trouble in making shipments of certain grades on orders taken several months ago, and in some cases have had to cancel, as they were unable to furnish as contracted. In such cases the purchaser has been able to obtain other Irons of equal quality at a lower price. Coke Iron seems to be in less demand than Lake Superior Charcoal, but users of both are postponing buying as long as possible. From the number of inquiries that are being received, however, it looks as if there would be a more active market, especially for Car-Wheel Irons, early next month. Present quotations, f.o.b. Detroit, are as follows:

Lake Superior Charcoal, all numbers.....	\$21.00 @ \$21.50
Lake Superior Coke, All Ore.....	20.50 @ 21.00
Lake Superior Coke, Cinder Mixed.....	19.00 @ 20.00
Standard Ohio Blackband.....	20.50 @ 21.00
Southern No. 2.....	18.75 @ 19.25
Southern Silvery.....	18.50 @ 19.00
Jackson County, Ohio, Silvery.....	20.00 @ 21.00
American Old Iron Rails.....	25.00 @ 26.00
Old Wheels.....	21.00 @ 21.50

Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue,
PITTSBURGH, PA., April 17, 1888.

There has been no especial change in the general Iron situation during the past week. There is no improvement to note. With but few exceptions our Iron and Steel manufacturers report business as being very unsatisfactory. Not only are orders very scarce for this season of the year, but under the influence of an active competition prices have been reduced to such an extent that there is but very little margin for profit. The action of the different railroads centering here, in refusing to reduce rates, is severely criticized by our manufacturers and furnacemen in particular, who say that they are obliged to pay as much for transportation now as they did when Pig Iron was bringing \$4 @ \$5 per ton more. Some of the railroads are largely dependent upon furnacemen for business; the transportation of Pig Iron, Ore, Coke, Limestone, &c., in this district is very large when the Iron business is in a prosperous state, and the railroads get their full share of it. The indications are that the railway managers will make the proposed reduction before long. It is said that a good many idle cars are standing in various localities—not a very favorable omen as regards general business.

Pig Iron.—There has been an increased volume of business reported during the week, but no improvement in prices, which to the furnacemen continue very unsatisfactory and unremunerative. The demand, as a rule, is still for small quantities. Notwithstanding it is admitted that there is nothing in the business at present prices, consumers indicate by their refusal to buy beyond their immediate wants that they are not apprehensive of any immediate advance in price. Bessemer Iron has declined during the week under review, while in other grades there has not been much change. The general situation is still in the consumer's favor, and as a matter of course they will continue to make the best of it as long as they can. We quote prices as follows:

Neutral Gray Forge.....	\$15.00 @ \$15.75, 4 mos
All Ore Mill.....	16.25 @ 16.75 "
No. 1 Foundry.....	18.00 @ 18.25 "
No. 2 Foundry.....	17.25 @ 17.50 "
No. 3 Foundry.....	16.00 @ 16.50 "
No. 1 Charcoal Foundry.....	24.00 @ 25.00 "
Cold Blast Charcoal.....	26.00 @ 27.00 "
Bessemer Iron.....	17.25 @ 17.50 cash.

Included in the sales reported were 700 tons No. 1 Gray Forge at \$15.50, cash; 150 tons Close Bessemer at \$16.50, cash; 900 tons No. 1 Bessemer at \$17.25 @ \$17.50, cash; 275 tons No. 1 Foundry at \$17.75 @ \$18, four months. It is rumored that sales of Bessemer have been made below the lowest price quoted, but nothing reliable is known in regard thereto.

Muck Bar.—Is dull and prices are weak. Sales of 1000 tons reported at \$26.50 @ \$26.75, cash. Some makers are refusing to sell a ton below \$27, cash, and they aver that there is nothing in it at that. Some have taken contracts at so much a ton for puddling, the buyer furnishing the Pig-Iron and paying all other expenses.

Manufactured Iron.—There has been no improvement in demand during the week under review. Business continues very light for the season, and the outlook for an early improvement is not as encouraging as it might be. Orders are nearly all small, indicating that buyers are apprehensive of lower prices and are buying as their immediate necessities require. Prices are hard to quote correctly, as they are irregular, and for desirable orders are being cut very close. Bars, 1.75¢ @ 1.85¢; Plates, 2.25¢ @ 2.35¢; No. 24 Sheet, 2.75¢ @ 2.80¢, all 60 days, 2¢ off for cash. There is an im-

proved demand for Skelp Iron, and as the two mills of Graff, Bennett & Co., which were employed chiefly on Pipe Iron, are not likely to be started up soon, the outlook for the other mills in this respect is better.

Nails.—The change made in prices at the meeting of the Western Nail Association in this city last Wednesday does not go into effect until the 1st of June. The main object sought to be obtained was to equalize the present price list; the larger sizes were advanced slightly, while the smaller sizes were reduced about the same extent. When there was a difference of 25¢ per keg in the prices it was changed to 10¢. There will be another meeting before long to take further action. We continue to quote at \$1.90, 60 days, 2% off for cash, for carload lots and upward.

Wrought-Iron Pipe.—Trade is picking up somewhat, but the market is still open and in a go-as-you-please condition. This is the worst feature of the business and there is not likely to be any improvement in this respect until the Pipe Manufacturers' Association is got into working order again. Some of the mills are in operation, while others have but little to do. This branch of the Iron business has been overdone within the past few years.

Old Rails.—There is still some inquiry for Old Iron Rails, and we can report sales of 2000 tons of American Tees, Pittsburgh delivery, at \$23 @ \$23.25, and 300 do. for delivery at Youngstown, Ohio, at \$23.25. Foreign cannot be sold here in competition with American, as the latter, in addition to being cheaper, are preferred by consumers.

Steel Rails.—There have been none made here since the strike at the Edgar Thomson Works over three months ago, and in the absence of sales may be quoted nominally at \$31.50 @ \$32, cash, on cars, at works.

Railway Track Supplies.—Manufacturers continue to quote Railway Spikes at 2.25¢, 30 days; Splice-Bars, at 1.85¢ @ 1.90¢ and Track Bolts at 2.90¢ with square and 3¢ with hexagon nuts. There may be sales below prices quoted, as competition is sharp.

Merchant Steel.—There is a moderate business at unchanged prices. Tool Steel, 8½¢ per lb; Crucible Spring Steel, 4½¢; Crucible Machinery, 5¢; Open-Hearth Machinery, 2½¢.

Billets, &c.—Bessemer Billets remain unchanged at \$28.50 @ \$29, cash, and same quotation will apply to Nail Slabs. Domestic Rail Crops, \$18, cash; Bloom Ends, 25¢ @ 50¢ per ton less. The Steel mills, as a rule, appear to be better supplied with orders than the Iron Mills.

Old Material.—There is a very fair demand and prices as a rule are steady. Sales No. 1 Wrought (Railroad) Scrap at \$20, net ton; Wrought Turnings quoted at \$13 @ \$13.50; Car Axles, \$24.50 @ \$25; Cast Scrap, \$16.50 @ \$17, gross; Cast Borings, \$11.50 @ \$12; Car-Wheels, \$20.

Metal Market.

Copper.—On Thursday last week Chili Bars gave way in the London market 2/6 per ton on the spot, and 10/ in futures, being cabled £80 the former and £79 the latter, 325 tons changing hands, while here the metal was easy, and sales were restricted to 75,000 lb, at 16.75¢ @ 16.80¢ for spot and 16.80¢ for April. On Friday Bar futures furthermore declined 15/ to £78.5/, spot remaining unaltered, the sales not exceeding 225 tons. In our own market Copper was again easier, leading to increased sales, 225,000 lb being taken at 16.65¢ for May, 16.55¢ for June,

and 16.40¢ for July. On Saturday the market was dull, but steady, sales being limited to 25,000 lb April at 16.60¢. While remaining steady with spot Bars at £80, London dropped 30/ in futures, to £76.15/, sales reaching 450 tons. In this market the speculation was light, only 50,000 lb being sold, including spot at 16.50¢ @ 16.65¢. Yesterday London improved 2/6 with Chili Bars on the spot, and 15/ in futures, the respective quotations being £80.2/6 and £77.10/, sales reaching 425 tons, and our own market rising correspondingly 10 to 15 points, and displaying some buoyancy. Today, Wednesday, London opened with spot at £82, and futures at £80.5/, while our market recorded sales at 16.70¢ for April, 16.75¢ for May, and 16.65¢ for June. Nothing has yet been done in the way of a pool sale, although negotiations are said to be pending. The Calumet and Hecla Mine is not yet opened, the management moving cautiously. Mr. C. Kirchhoff, Jr., agent of the United States Geological Survey, has sent out a preliminary bulletin relating to production and consumption of Copper in 1887. He places the production as follows:

	1886.	1887.
Lake Superior	79,890,798	75,471,890
Arizona	15,657,085	17,720,462
Montana	57,611,621	78,699,677
New Mexico	558,385	288,664
California	430,210	100,100
Colorado	409,306	2,012,027
Utah	500,000	500,000
Nevada	50,000	
New England	815,719	200,000
Southern States	20,811	
Lead desilverizers	1,282,496	2,432,804
Total	156,785,381	177,420,524
From imported Pyrites and Ores	4,500,000	3,750,000

The returns from 32 works, including nearly all the principal Brass and Copper rolling mills, show an aggregate consumption during 1887 of 72,521,287 lb, as compared with 63,921,217 lb in 1886. Eighty Brass founders, machine works, valve manufacturers and pump makers report a total consumption in 1887 of 9,822,731 lb, as compared with 8,146,866 lb in 1886. Together, these two classes report 82,344,018 lb in 1887, against 72,068,083 lb in 1886, an increase of 14%. From these data the conclusion is reached that the home consumption of the United States has been generally overestimated, and was not much greater than about 100,000,000 lb in 1887. Messrs. Henry Bath & Son, London, in their Copper report, dated April 4, write: "Stocks again show a heavy increase, but have had no influence on values. The trade generally is almost at a standstill, and consumers so far show no signs of coming into the market. It is now generally understood that the syndicate has ample financial means, and present appearances point to their keeping prices up until consumers are forced to buy. We may therefore anticipate a very dull state of affairs for some time to come." The visible supply in England and France on April 1st, tons Fine, had, from 45,791 on February 1st, increased to 52,709 on March 1st, and to 59,040 on April 1st, showing an increase of nearly 30% in two months, while the deliveries fell from 22,844 during the first quarter of last year to 16,084 tons Fine, or 42%. Chilean export during the first quarter was 9765 tons Fine, against 8365 last year, being 16% more. The imports into Liverpool and Swansea were simultaneously 6789 tons Fine from this country, as compared with 601 tons during the corresponding period of last year. All these figures are very unfavorable and well calculated to precipitate the decline in futures we are witnessing in London. Rio Tinto shares dropped 17 francs last week on the Paris Stock Exchange; on Monday last again 7½ francs. The market closed stronger, with sales of April up to 16.80¢, while casting brands are nominal.

Tin.—During the week the London market has kept steady at £166 for spot, while futures remained at £115, which is still the figure at the close. In this market a decline earlier in the week from 29.90¢ for April, 26.50¢ for May, 25.50¢ for June and 25¢ for July, to 29.70¢ and 26.25¢ respectively was followed on Monday and Tuesday by a firmer feeling, June selling at 25.35¢ and April at 30¢, with 30.15¢ bid and 30.90¢ asked for that month, 26.25¢ and 26.50¢ respectively for May, and 25.25¢ and 25.45¢ respectively for June. The market closed stronger, with sales of April Tin at 30.30¢ @ 30.25¢, while May was placed at 26.25¢. **Tin Plates.**—The benefit of reports will suffice this week, as there is nothing of any moment to notice in connection with the Tin-Plate trade. Our cable despatch of last week brought word of the failure of Mr. Philip S. Phillip's attempt to form a Tin-Plate syndicate, and from all accounts the project is not likely to come up again, at least for the present. Stocks here are still light and much broken, but with the little demand for Tin Plates prices remain stationary. The trade in Ternes is quiet and importers find it difficult to get deliveries for early shipment. We quote large lots of Tin Plates in New York as follows: Siemens-Martin Steel, Charcoal finish, \$5.10 @ \$5.30; ditto, Coke finish, \$4.90 @ \$5; Ternes, \$4.20 @ \$4.30; Bessemer Coke, \$4.70 @ \$4.75, and Wasters, \$4.57½; Penlan Grade Cokes, \$4.60.

Lead.—During the week the leading speculator has sustained the market by taking East and West about 1000 tons of Lead at 4.70¢, at which the market is now held. Consumers continue to buy very sparingly. From Europe come advices from the best authority that all talk of a syndicate there has subsided, and that leading observers have no faith in its efficacy. A very important point, so far as the European situation is concerned, is the rapidly increasing shipments of Lead from Australia, every steamer bringing large quantities to England.

Spelter.—Our market is weak here at 4.75¢ @ 4.80¢ for Common Domestic, and 5¼¢ @ 6¢ for foreign, according to brand.

New York Metal Exchange.

The following sales are reported:

THURSDAY, April 12.	
25,000 lb Copper, April	16.80¢
25,000 lb Copper, spot	16.75¢
25,000 lb Copper, spot	16.80¢
FRIDAY, April 13.	
20 tons Tin, April	29.90¢
40 tons Tin, June	25.50¢
10 tons Tin, July	25.00¢
75,000 lb Copper, June	16.35¢
25,000 lb Copper, July	16.45¢
16 tons Lead, May	4.72½¢
16 tons Lead, May	4.75¢
50,000 lb Copper, May	16.65¢
10 tons Tin, April	29.85¢
10 tons Tin, April	29.80¢
30 tons Tin, April	29.75¢
75,000 lb Copper, July	16.40¢
10 tons Tin, May	26.50¢
SATURDAY, April 14.	
10 tons Tin, April	29.75¢
10 tons Tin, April	29.70¢
50 tons Tin, May	26.25¢
10 tons Tin, May	26.30¢
10 tons Tin, April	29.65¢
25 tons Tin, April	29.70¢
30 tons Tin, May	26.25¢
25,000 lb Copper, April	16.60¢
MONDAY, April 16.	
10 tons Tin, April	29.70¢
10 tons Tin, April	29.60¢
10 tons Tin, April	29.75¢
25,000 lb Copper, spot	16.50¢
25,000 lb Copper, spot	16.65¢
TUESDAY, April 17.	
50 tons Tin, June	25.35¢
25,000 lb Copper, spot	16.55¢
50,000 lb Copper, April	16.60¢
25,000 lb Copper, June	16.40¢
25,000 lb Copper, July	16.30¢
50,000 lb Copper, May	16.65¢
25 tons Tin, April	29.00¢
100,000 lb Copper, April	16.60¢

100,000 lb Copper, April.....	16.65¢
25,000 lb Copper, June.....	16.60¢
96 tons Lead, May.....	4.7 ¢
WEDNESDAY, April 18.	
25,000 lb Lake Copper, May.....	16.70¢
25,000 lb Lake Copper, June.....	16.65¢
75,000 lb Lake Copper, May.....	16.75¢
100,000 lb Lake Copper, July.....	16.75¢
50,000 lb Lake Copper, April.....	16.75¢
50,000 lb Lake Copper, April.....	16.80¢
10 tons Tin, May.....	26.35¢
10 tons Tin, April.....	31.30¢
10 tons Tin, April.....	30.25¢

Coal Market.

The Anthracite Coal market is dull, the season for rapid consumption having gone by, while as yet it is too early to stock up for winter use. The producers would have it understood that they intend and are able to restrict the output rather than sell without profit, but consumers manifest a disposition to buy only for present use, few if any large contracts having been closed under the spring circulars. They insist upon maintaining uniform prices without concession, but frankly admit that individual operators, outside of the six companies, are in some instances cutting severely. According to the official statement the stock of Coal on hand April 1 was 465,709 tons, an increase since February of 233,000 tons, but the accumulation is said to be less than at the corresponding date last year. The statistics of weekly production compare as follows:

	Week.	Year.
Total, March 31.....	787,028	7,754,000
Total, April 7.....	967,869	8,414,000
Total, April 14.....	707,627	9,251,000

For the first time since the strike production has overtaken that of 1887, and is now 36,000 tons in excess, notwithstanding the Wyoming region is on three-quarter time. The Schuylkill region, on the contrary, put out 25,000 tons more than during the previous week. The Reading Railroad reports Coal shipments for the week of 160,000 tons, of which 67,500 went to Port Richmond and Elizabethport. The Pennsylvania Railroad reports for the week 222,000 tons and for the year 3,155,000 tons; increase compared with 1887, 878,000 tons. It thus appears that the Reading Coal and Iron Company are mining more Coal than ever, and that the Lehigh Valley is working up to its standard capacity, the Wyoming alone running on short time. The Western and Eastern demand for Coal is expected to be heavy immediately on the opening of navigation.

Bituminous Coal is in better demand, but prices are inclined to sag. Considerable orders for Eastern shipment are reported. Prices at Buffalo f.o.b. are equal to \$4.80 per ton for Stove and Chestnut.

An important Coal trade is rapidly being developed on the extension of the Pittsburgh, Shenango and Lake Erie Railroad.

Imports.

The imports of Iron and Steel, Hardware, &c., at this port from April 10 to April 12, inclusive, and from January 1 to April 12, inclusive, were as follows:

Iron and Steel.

	April 10 to April 12.	Jan. 1 to April 12.
Iron Ore: A. Earnshaw.....	306	3,725
Pig Iron: Crocker Bros.....	200	3,000
Henderson Bros.....	200	710
Jas. Williamson & Co.....	1,300	2,000
N. S. Bartlett.....	100	1,900
Steel: R. F. Downing & Co.....	25	106
W. F. Wagner.....	25	46
R. H. Wolff & Co.....	11	200
F. S. Pittitch.....	8	114
Newton & S.....	6	63
H. N. Holt.....	6	6
J. Abbott & Co.....	4	186
Steel Sheets: Naylor & Co.....	48	361
Steel Rods: Cary & Moen.....	27	339
Naylor & Co.....	111	4,518
A. Heyn.....	25	794
G. W. Sheldon & Co.....	11	11
R. F. Downing & Co.....	10	87

Steel Bars: Naylor & Co.....	29	361
M. Cohn.....	5	5
C. W. Power.....	4	4
Steel Forgings: Thos. Prosser & Son.....	95	1,572
Steel Hoops: W. H. Walbaum.....	344	536
Steel Hoops: A. R. Whitney & Co.....	275	1,605
Iron Screw Rods: American Screw Co.....	300	321
Tubes: J. S. Leuz & Co.....	6	6
Old Iron Rails: Henderson Bros.....	137	397

Tin Plates.

	Boxes	Boxes.
Phelps, Dodge & Co.....	10,907	182,751
Dickson, Van Dusen & Co.....	8,629	74,637
R. Crooks & Co.....	3,857	23,267
Bruce & Cook.....	3,491	21,406
Hy. Whittemore & Co.....	3,103	19,899
T. H. Coddington & Co.....	2,423	42,376
Central Stamping Company.....	2,110	7,564
S. Shepard & Co.....	1,737	2,729
N. L. Cort & Co.....	1,767	27,961
Naylor & Co.....	1,664	23,039
H. R. DeMilt & Co.....	1,411	5,032
Wolf & Roessing.....	1,352	11,257
Pratt Mfg. Company.....	840	40,242
Lombard, Ayres & Co.....	550	2,500
Merchant & Co.....	560	2,911
Lalanc & G. Mfg. Company.....	309	524
Newall Bros.....	158	158

Metals.

	Pounds.	Pounds.
Tin: Crooke S. & Refg. Co.....	21,530	146,601
D. Thomsen & Co.....	22,545	104,157

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 16; Arms, cs., 35	
Central Stamping Co. Mdse., case, 1	
Curley, J. & Bros. Cutlery, case, 1; ditto, case, 1	
Downing, R. F. & Co., Chains, cks., 20	
Folsom, H. & D., Arms, cs., 4	
Farnley Iron Co., Bricks, cks., 67	
Field, Alfred & Co., Iron Chains cks., 22; Hdws., pkgs., 3; Cartridge Cases, cs., 3	
Graef Cutlery Co., Cutlery, cs., 10	
Hoe, R. & Co., Mdse., cs., 2	
Hunt, John, Lead Pipe cks., 12	
Judd, L. H. & Co., Mdse., cs., 13	
Lau, J. H. & Co., Arms, cs., 6	
Marshall & Co., Mach'y, cs., 2	
Merch. Disp. Co., Arms, cs., 61; Mach'y, cs., 58	
New Era Gas Co., Gas Engine, cs., 4; Iron Pot, 1	
Naylor & Co., Saws, case, 1	
Oliver, Frank J., Hdws., cs., 4	
Pim, Forwood & Co., Stoves, 60; Pots, 494	
Pierson & Co., Files, cks., 5	
Pacific Mail S. S. Co., Mach'y, pcs., 15; do., cs., 2	
Rusthal, A. de & Co., Nails, cs., 46	
Simpson, J. S. & G. F., Mach'y, case, 1	
Stoddard, Lovering & Co., Mach'y, cs., 5	
Strauss, Blumenthal & Co., Hdws., cs., 5	
Taylor, Thos., Hdws., cs., 9	
Turney, T. B., Hdws., cs., 2	
Vom Cleft & Co., Mdse., cs., 44	
Wiebusch & Hilger, Lim., Mdse. 71 Hdws., pkgs., 9	
Order, Mach'y, cs., 23; do., pkgs., 4; Sewing Machines, cs., 53; Cutlery, cks., 6; Hdws., pkgs., 11	

Exports of Metals.

	April 10 to April 12.	Jan. 1 to April 12.
Copper: J. Abbott & Co.....	10,639	3,737,859
Lewisohn Bros.....	10,639	3,327,949
F. A. Lomal.....	59,155	2,581,293
American Metal Co.....	59,155	3,053,103
G. H. Nichols.....	111,116	111,116
J. Bruce Jamay.....	112,000	112,000
S. Mendel.....	560,000	560,000
Ledoux & Co.....	2,100	2,100
Phelps, Dodge & Co.....	230,664	230,664
Muller, Schall & Co.....	490,000	490,000
Copper Queen Con. M. Co.....	224,034	224,034
J. Kennedy, Tod & Co.....	112,026	112,026
H. Becker & Co.....	1,250	1,250
Orford C. & S. Rfg. Co.....	224,681	224,681
Robt. M. Thompson.....	125,000	125,000
Thos. J. Pope, Sons & Co.....	650,100	650,100
J. Parsons & Co.....	67,500	67,500
Bridgeport Copper Co.....	112,000	112,000
Copper Matte: Williams & Terhune.....	32,984	17,238,809
Lewisohn Bros.....	206,600	2,953,380
American Metal Company.....	519,485	519,485
J. Abbott & Co.....	295,000	295,000
C. Ledoux & Co.....	458,900	458,900
F. W. J. Hurst.....	184,288	184,288
G. H. Nichols.....	328,959	328,959

A consolidation of coke interests has just been made by some of the leading operators in the Connellsville region which will make a combination that will rank second in strength in the region, with a capital stock of \$1,200,000. The new concern is the McClure Coke Company, formed from the interests of McClure & Co. and Rafferty & Donnelly, both of Pittsburgh. Messrs. Rafferty & Donnelly are the leading members of the firm of McClure & Co., the latter having been president of the defunct coke syndicate since its formation. The new company will be composed of Messrs. Gilbert T. Rafferty, Charles Donnelly, B. H. Ruby, William J. McTighe and John P. Brennan. The new company will control about 1550 ovens, which may be increased some time by accessions of several

other companies in which the members are now interested. The Frick Company are the largest concern in the region, having 2765 ovens. The J. M. Schoonmaker Coke Company are third with 1097 ovens, and the Connellsville Coke and Iron Company fourth with 1000 ovens. One of the members of the new company has made the following statement regarding the consolidation: "We have merely consolidated the interests of the members of the firms of McClure & Co. and Rafferty & Donnelly, and expect to get a charter this week. All the contracts held by the two firms named will be filled just the same as though the consolidation had not been formed. As soon as we receive the charter there will be an election of officers. Trade is not as good as it might be, and operators are only running enough ovens to fill contracts."

Our Pittsburgh correspondent telegraphs: There is no change to report in the condition of affairs at the Edgar Thomson Steel Works of Carnegie Bros. & Co., Limited, at Braddock, Pa., and, notwithstanding all reports to the contrary, a settlement of the difficulties is as far off now as ever. The workmen admit that they made a great mistake in not accepting the 10 per cent. reduction offered by the firm in January last, as in all probability they would have had steady employment since that time. It is a settled fact that when the works resume operations it will be under the proposition made to the employees last month by Andrew Carnegie, which calls for two turns of 12 hours each instead of three turns of eight hours each, as formerly.

The Nashville (Tenn.) meeting of the American Society of Mechanical Engineers has been definitely fixed for May 8. A large number of interesting papers has been announced.

Referring to the overhead beam blooming engines, built by the I. P. Morris Company, of Philadelphia, Pa., for the Pioneer Mining and Mfg. Company, and illustrated in *The Iron Age* of April 5, 1888, we take pleasure in saying that they were designed and built from specifications furnished by Samuel and John Thomas, who have been for years identified with the Crane Iron Company of Catsauqua, and the Thomas Iron Company, of Hokenauqua, Pa., at whose furnaces engines built under their direction at the works of the I. P. Morris Company as far back as 1856 are still successfully running, showing proof of their good qualities.

Chas. A. Schieren & Co., of New York, report sales of leather link belting during the past week to the following firms: Copperfield Mining and Smelting Company, South Fairlee, Vt.; The F. Gray Company, Piqua, Ohio; A. H. Fogg & Co., Houlton, Me.; Muscogee Mfg. Company, Columbus, Ga.; Rand Drill Company, 23 Park Row, New York; Joseph Dixon Crucible Company, Jersey City, N. J.; Standard Horse Nail Company, New Brighton, Pa.

Thomas Silver, civil engineer and inventor, died in this city on the 12th inst. of Bright's disease. He was born on June 17, 1813, in Cumberland County, New Jersey. Mr. Silver's greatest success was with what is known as Silver's marine governor. Admiral Pairs introduced the governor in the French navy in 1855. At the Royal Institute, London, it was resolved "that Mr. Silver had done as much as any man living to facilitate steam navigation, enabling vessels to weather all gales without danger of broken shafts, wrecking, and consequent loss of life." The British Admiralty ordered it into general use in 1864, and it was adopted in all the navies of the world excepting that of his own country, the United States.

Hardware.

The volume of business this month has not as yet been up to expectations, and there is some complaint that orders are not coming in with as much freedom as is desired. Reports from different parts of the country are, however, quite encouraging, and there seems to be an expectation of a good season's business. Prices in most lines are steady, and comparatively few declines are to be noted. There is some complaint of sluggishness in collections.

NAILS.

With more favorable weather for building operations the demand both from local consumers and from the country is growing in volume, and a fair amount of business is being done, both in carload and small lots. Some irregularity in price is reported, not alone in brands not well known, but also in standard quality. Manufacturers quote carload lots \$1.95 to \$2 on dock.

We print elsewhere the new Western schedule of extras, which is not, however, considered the best attainable by some large Western manufacturers.

At an adjourned meeting of the Atlantic States Nail Association, held at the Astor House, New York, April 12th, these were present: Tremont, Fuller Bros., Borden & Lovell, Leeds, Robinson & Co., Robinson Iron Co., Mount Hope, Oxford, Cumberland, Duncannon, Birdsboro', Chesapeake, Harrisburg, Van Allen, Williamsport, Danville, Sunbury, Ellis & Lessig Co., Watsonstown, Towanda; also by proxy, Milton, M. H. Taggart & Co. A telegram was read from the Western Association, saying that they had adopted the Schedule of Extras proposed March 8th, and asked for co-operation of Eastern mills. Before proceeding to business the president announced the death of Robert E. Blankenship, by an accident, which occurred March 13th, at Richmond, Va. On motion, the following resolutions were passed unanimously, it being the first meeting since the occurrence:

In view of the recent decease of our Friend and Colleague, Robert E. Blankenship, President of the Old Dominion Iron and Nail Works Co., of Richmond, Va., the Atlantic States Nail Association hereby resolves to record on its Minutes this tribute to the memory of one of its earliest supporters and staunchest friends.

And as individual members, to express our appreciation of his uniform courtesy toward others, his positive convictions of right and wrong, and adherence to what he deemed right, his freedom from pretence and guile in dealing with friends and opponents, his energy and intense earnestness, and his unflinching integrity; constituents of the successful business man, the public spirited citizen, and the warm-hearted and generous personal friend.

And we Resolve, further, that the Secretary be requested to send a copy of this Minute to the family of our deceased friend, and express our sincere sympathy with them in their great bereavement. Also, to the Old Dominion Iron and Nail Works Co.

The Eastern manufacturers discussed a new schedule, which, in some respects, is quite a radical departure from that now in force. To allow of closer investigation of its effect upon individual interests, the schedule proposed is now under advisement by the different manufacturers.

WIRE NAILS.

The market is substantially as at our last report, the prices of the association being better maintained than for some time. A few small manufacturers are making concessions in prices, and in some cases the Nails can be procured from second parties on slightly better terms than the manufacturers are now willing to give, but the market in general may be characterized as firm at \$2.70 base for carload lots, with de-

liveries as mentioned in our last issue, \$2.85 to \$2.90 being the regular price for small lots from stores.

BARB WIRE.

Some manufacturers report a lull in the demand, which, however, continues lively enough to make it a difficult matter to catch up with orders, even when running double time. We quote 4 cents for carload lots of Four Point Galvanized Barb Wire. A meeting of manufacturers is in progress to-day at Chicago.

In regard to this meeting our Chicago office telegraphs: "At the meeting of the Barb Wire Association to-day, 75 per cent. of capacity of country represented personally or by letter, including the owners of patents. Those present agreed in the belief that prices had been more closely adhered to under the agreement now in force than at any previous time as the result of an effort of this kind. It was unanimously resolved to suspend production entirely from July 1 to August 16, and the secretary was directed to correspond with manufacturers not represented, and endeavor to induce them to co-operate, reporting the result of his efforts at a meeting to be held at St. Louis on the 28th. An effort is being made to establish a difference of 10 cents between two-point and four-point Barb Wire. The meeting is still in session."

BRASS AND IRON WORK.

Revised, and in most cases, reduced, quotations are announced on Plumbers' Brass Work, Steam and Gas Fitters' Brass and Iron Work, Cast-Iron Fittings, &c., an increased discount of about 10 per cent. being given on most lines. Outside competition is regarded as the reason for this change in price. The new discounts are as follows, there being an additional 2 per cent. for cash.

	Discount.
Iron Cocks.....	65&10
Iron Cocks, Brass Plugs.....	60&10
Iron Body Valves.....	65&10
Iron Body Expansion Joints.....	65&10
Iron Foot Valves, with Strainers.....	65&10
Iron Strainers.....	60&5&10
Brass Globe Valves, Finished, with Brass Wheels.....	40&10
Radiator Valves.....	60&10
Radiator Valves, with Frink Patent Seat.....	60&10
Brass Valves, with Frink Patent Seat.....	60&10
Brass Valves, Globe, Angle and Check.....	60&10
Brass Cross Valves.....	60&10
Brass Butterfly Valves.....	50&10
Brass Steam Cocks.....	57½&10
Brass Service, Meter and Union Meter Cocks.....	57½&10
Brass Safety Valves.....	60&10
Brass Vacuum Valves.....	50&10
Brass Expansion Joints.....	50&10
Brass Pump Valves.....	50&10
Brass Fittings.....	60&10
Brass Unions.....	60&10
Air Valves.....	60&10
Soldering Unions and Nipples.....	60&10
Whistle Valves.....	60&10
Oil Pumps.....	55&10
Steam Bibbs and Stops.....	50&10
Steam Gauge Cocks.....	55&10
Air Cocks.....	60&10
Radiator Air Cocks.....	60&10
Cylinder Cocks.....	50&10
Gauge Cocks.....	55&10
Water Gauges.....	60&10
Steam Whistles.....	60&10
Combination Water Columns.....	70&10
Hose Couplings, Bands, Clamps, Pipes, Sprinklers, Cocks, Caps, and Hose and Iron Pipe Nipples.....	55&10
Oil Cups.....	60&10
Globe and Hollow Plug Oil Cups.....	50&10
Lubricators.....	60&10
Ground Key Work.....	55&10
Compression Work.....	50&10
Chain Stays.....	50&10
Iron Boiler Couplings, Ground Face, per set, \$1.25.....	10
Basin Plugs.....	55&10
Sink or Bath and Wash-Tray Plugs.....	55&10
Basin Clamps.....	55&10

The discounts on Fittings are as follows, with an additional 2 per cent. for cash:

Cast Iron Fittings, standard sizes.....	70&10
Cast Iron Fittings, not standard sizes.....	60&10
Plugs and Bushings, standard sizes.....	75&10

Plugs and Bushings, not standard sizes.....65&10
Malleable Iron Unions.....67½
Branch Tees, Hook Ring and Expansion Plates and Coil Stands.....67½

MISCELLANEOUS PRICES.

The Chantrell Tool Company, Reading, Pa., for which William H. Jacobus, 90 Chambers street, New York, is agent, call attention to their Chantrell's Perfected Bit Brace, the construction and special features of which are explained in a circular. The point is emphasized that the Braces will hold Twist Drills with round shanks as well as any Drill Chuck, while they also hold the square shank. The Braces are made either plain or ratchet. The list prices are as follows, subject to a discount of 50 per cent.:

Ratchet Bit Brace.

	Per doz.
No. 128, 8-inch sweep.....	\$33.00
No. 130, 10-inch sweep.....	36.00
No. 132, 12-inch sweep.....	39.00

Plain Bit Brace.

No. 106, 6-inch sweep.....	21.00
No. 108, 8-inch sweep.....	24.00
No. 110, 10-inch sweep.....	27.00
No. 112, 12-inch sweep.....	30.00
No. 168, 8-inch sweep.....	10.25
No. 170, 10-inch sweep.....	11.25
No. 172, 12-inch sweep.....	12.50

M. A. Mihills, 166 Lake street, Chicago, is the Western representative of the company, having been recently appointed.

The Wire Goods Company, Worcester, Mass., issue a circular giving quotations on Steel Wire Nails, as adopted by the manufacturers at the late meeting in Pittsburgh.

From the special notice on page 34, it will be seen that Sidney Shepard & Co., Buffalo, N. Y., intimate that they are in a position to offer special inducements on Cut Nails, concerning which they invite inquiries.

The Morton Heel Stiffener Company, 99 Chambers street, New York, who, as stated in another column, are putting on the market Morton's Patent Counter and Heel Stiffeners, have adopted the following list, which is subject to a discount of 25 per cent., 30 days, with an additional 2 per cent. for cash in 10 days, f.o.b. New York or Chicago:

No. 1, small size, per gross pair.....	\$15.00
No. 2, medium size, per gross pair.....	15.50
No. 3, large size, per gross pair.....	16.00

The goods are packed with screws, one dozen pairs in box, and one gross pairs in case.

The following are the discounts of Walbridge & Co., Buffalo, N. Y., applying to the goods represented in their catalogue, to which we referred in our last issue:

	Discount.
Vases.....	30
Settees.....	30
Globe Lawn Sprinklers.....	40
Lawn Sprinklers, Nos 10 and 50.....	50
Prize Hose Reels.....	50&10
Stable Fixtures.....	40

The Auger and Bit market has still further improved and prices are more uniform, those who were offering low quotations having in nearly all cases withdrawn them. This may be regarded as the more significant and healthful, inasmuch as it has taken place without any concerted or formal action of the manufacturers, and as a natural reaction from unprofitable prices.

The manufacturers of Machine Bolts have been conferring with reference to the formation of a strong association, and efforts will be made to accomplish this. It is intimated that the prospect of these negotiations being carried to a successful issue is better now than it has been.

The market on Tubular Lanterns is somewhat unsettled, the prices having for some time past been declining under the influence of animated competition, which

has brought several new Lanterns to the attention of the trade. This condition of things still continues, and some new patterns have lately been put on the market and others are expected in the near future. In the meantime the trade are getting the benefit of materially lower prices than those ruling some time ago.

The Lock market is referred to as rather quiet, and prices are irregular and slightly lower than they have been, as most of the manufacturers are desirous of securing orders. The inducements in quotations are in many cases offered in the form of net prices lower than those which have heretofore been made.

The Alford & Berkele Company, 77 Chambers street, New York, are agents for the American Oil Stove Company, Gardiner, Mass., whose 1888 catalogue, recently issued, shows an enlarged line of goods, and states that the increased business of the company has led them to seek new quarters, and that last December they moved into their present factory, a large three-story and basement brick building, built expressly for the Oil Stove business. They direct special attention to their Baby American, and to the fact that it is made without cement and is non-leakable, and that it has a 4½-inch wick. The Double Wick Raiser is also referred to. It is intimated that special net prices are made on this article. The list is as follows, and is subject to a regular discount of 25 per cent.:

Name.	Price.
Baby American, 0.....	\$1.50
Baby American, No. 1.....	1.50
Baby American, Twin.....	2.00
Baby American Oven, Round, No. 1.....	1.00
Baby American Oven, Square, for 0.....	1.00
Baby American Oven, Square, for No. 1 and 1 win.....	1.00
Baby American Heating Stove, No. 1.....	2.00
Baby American Radiator, No. 1.....	1.00
Baby American No. 2.....	2.50
Baby American No. 2, Ex. Top.....	.75
Baby American No. 2 Oven, Glass.....	1.75
Baby American No. 2 Heating Stove.....	3.25
Baby American No. 2 Radiator.....	1.50
Baby American, No. 3, Complete.....	5.00
American, No. 4, with Top.....	9.25
American, No. 4, Ex. Top.....	2.75
American, No. 4, Oven, Glass.....	2.75
American, No. 4, Stand.....	1.50
*American, No. 4, Complete.....	12.00
Chemical American, Complete.....	4.00
Young America.....	5.00
Young America Ex. Top.....	1.25
Young America Oven, Dark.....	2.25
Young America Oven, Glass.....	2.75
Young America, Heating Stove.....	6.50
Young America, Radiator.....	3.00
*Young America, Complete.....	9.00
Young America No. 6, with Top.....	12.00
Young America No. 6 Oven, Glass.....	3.50
Young America No. 6 Stand.....	4.50
Young America No. 6 Flat Heater.....	.50
*Young America No. 6, Complete.....	15.50
American No. 2.....	6.00
American No. 3.....	8.00
*American No. 3, Complete.....	14.00
American No. 5.....	13.00
*American No. 5, Complete.....	18.50
Extension Top No. 3, Deep.....	2.50
Extension Top No. 5.....	2.00
Oven for Nos. 2, 3 and 5, Dark.....	3.00
Radiator for Nos. 2, 3 and 5.....	3.50
Range Stand for No. 2 or 3.....	2.50
Range Stand for No. 5.....	3.00
Broiler for all stoves.....	1.00
Flat Heater for all stoves.....	.75
S. R. K. Revolving Sad Iron Heater.....	1.50
S. R. K. Stove, Oil.....	2.00
S. R. K. Stove, Oil, No. 4.....	5.00
S. R. K. Stove, Gas.....	1.50
S. R. K. Oven, Round.....	1.00
S. R. K. Oven, Square.....	1.50
S. R. K. Radiator.....	1.00
Wicks, per dozen.....	.40
Wicks, per gross.....	4.20

ITEMS.

The Edward Storm Spring Company, of Poughkeepsie, N. Y., for whom John H. Graham & Co., 113 Chambers street, New York, are agents, have issued a pamphlet describing their New York Safety Dumb Waiter and the Humphrey Pony Hand Elevator, of which we gave a description in a recent issue. They also call attention to their Side Bar Springs and Cannon's Diamond Point Nail set.

An extensive fire at Depere, Wis., on the 13th inst., included among a number of other business houses the Hardware establishments of Log & Bro. and G. G.

Pratsch. One-sixth of the business part of the town was destroyed. The sufferers were generally well insured.

J. Bardsley, 59 Elm street, New York, issues a price list of Patent Wood Knobs, Escutcheons, Door Stops, Shutter Knobs, Drawer Pulls and Patent Checking Spring Hinges of his manufacture. The list describes a new Wood Door Knob of special construction, to which we shall have occasion hereafter to refer. The Checking Spring Hinge is one of which we gave an illustrated description some months ago. Some of these goods are known to the trade, having been put on the market by the Yale & Towne Mfg. Company, who will continue to sell them, Mr. Bardsley also doing so directly.

It will be observed that Weston & Co., Syracuse, N. Y., call attention to their Princess Tricycles in their advertisement on page 56, where an illustration is given of the machine, and attention called especially to the Patent Steel Wheels.

Charles Morrill, 79 Chambers street, New York, issues a circular relating to Morrill's Saw Sets, the different patterns of which are illustrated.

I. L. Ellwood and H. M. Hartman, who practically owned a half interest in the Hartman Steel Company, Limited, of Beaver Falls, Pa., sold out their interests on the 1st inst. to Carnegie Bros. & Co., and have retired from the firm. Mr. Hartman has retained personally the Wire Mat and Picket Fence patents, including machinery and stock, also the galvanizing patents, and will temporarily continue the Mat and Fence departments in operation until new works can be erected, the location of which Mr. Hartman has not yet determined on. Mr. Hartman has sailed for Europe on a pleasure trip, and will be absent about three months.

The Scranton Mfg. Company, of Chicago, announce, under date of the 2d inst., that they have appointed the Moore Mfg. Company, 51 and 53 Franklin street, Chicago, exclusive selling agents of their entire product, thus leaving themselves free to devote their whole attention to manufacturing. With increased facilities they will leave nothing undone to sustain the high reputation of their Door Hangers.

The Moore Mfg. Company, 51 and 53 Franklin street, Chicago, are making important additions to their different lines and will shortly issue a new catalogue, giving a complete illustrated list of their goods. They have made arrangements to handle the Door Hangers made by the Scranton Mfg. Company, of Chicago, and now have no less than 37 different Hangers.

The Lufkin Rule Company, Cleveland, Ohio, have appointed S. A. Haines, 90 Chambers street, New York, as their selling agent to represent them in the Eastern States. They advise us that any orders intrusted to Mr. Haines will be promptly filled at bottom prices.

Jacob Hoffman, Cleveland, Ohio, has issued his annual catalogue for the present year. It describes a large variety of fine Carriages, Buggies, Three-Spring Delivery Wagons, Spring and Farm Wagons, Road Carts, &c., of many of which illustrations are given.

The Hopkins & Dickinson Mfg. Company, 83 Reade street, New York, with works in Brooklyn, N. Y., have issued price list No. 8, referring to their illustrated catalogue of 1879 and the supplements which have since been issued. This pamphlet gives the list prices of Locks, Latches, &c., in numerical order.

The trade will observe the illustration, on page 76, of the Lemon Squeezer manufactured by E. S. Hotchkiss, for whom

John H. Graham & Co., 113 Chambers street, New York, are agents. The illustration given shows the form and construction of this article, which has recently been put on the market.

The Auburn Tool Company, Auburn, N. Y., have issued their 1888 price list, which shows their well-known line of Planes, Plane Irons, Gauges, Bench and Hand Screws, Mallets, Coopers' Wood Tools, &c. It is a neat and convenient pamphlet.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., in their price current April 4 represent a line of staple goods and specialties, calling prominent attention to the fact that, the strike being ended, shipments can be made promptly.

The Iowa Farming Tool Company, Fort Madison, Iowa, issue, under date April 15, a Steel and Wood Goods bulletin, in which they allude to this as the sorting up season of the year, and give a list of their manufactures, with the suggestion that some of the articles mentioned may be required and ordered.

It will be seen by the special notice on page 52 that the entire stock of W. I. Negus & Co., 17 Warren street, New York, comprising Heavy and Shelf Hardware, Nails, House-Furnishing Goods, &c., will be sold at auction on Tuesday, April 24, continuing on Wednesday if the sale is not completed in one day. Haydock & Bissell are the auctioneers. Particulars are given in regard to the goods to be sold, and it will be seen that there is a large variety of staple Hardware and Cutlery. This sale is evidently deserving the attention of the trade.

We find in the *Daily Beacon*, Akron, Ohio, an article descriptive of the new Hardware store of Paige Bros. An illustration is given of the front of the store, which presents a fine appearance, and an account is given of the arrangement of the interior, with a brief sketch of the history of the firm.

Announcement is made by S. H. Perin and W. H. Quinn that they have secured the control of the patents of the Morton Counter and Heel Stiffener, formerly owned by Perin & Gaff Mfg. Company, Jeffersonville, Ind., and have formed a copartnership for the manufacture and sale of the same under the style and firm name of the Morton Heel Stiffener Company. Their office and salesroom are at 99 Chambers street, New York, where communications relating to business may be directed.

It will be observed that in the Special Notice signed "E. C. B.," page 51, to which we have before referred as giving a favorable opportunity for the purchase of an established hardware business, a change has been made, indicating that the stock on hand has been reduced to \$15,000 worth. The other particulars given will be of interest.

The Canton Novelty Cutlery Company, Canton, Ohio, issue circulars relating to their Pocket Cutlery and Razors. The special feature of these Knives is the fact that the handle is made of celluloid, underneath which can be placed one or more photographs, society emblems or designs, name, residence, business card, &c. The excellence of the cutlery is also alluded to. The circular shows some of the patterns made by the company and indicates some of the ways in which their principle is applied.

The Moore & Handley Hardware Company have succeeded the firm of Moore, Moore & Handley, Birmingham, Ala., a company with a capital stock of \$100,000. It is composed of T. P. Wimberly, in addition to all the members of the old firm, J. D. Moore, B. F. Moore and W. A. Handley. This change is made with a view to m

terially increasing the already large trade of the house, and it is intimated that the company are better prepared than ever before to meet the wants of their customers.

The announcement of the Hussey Re-Heater and Steam Plant Improvement Co., 15 Cortlandt Street, New York, in regard to an arrangement they would like to make with canvassers and salesmen for steam appliances, is deserving the attention of those who are open to such an engagement.

ARRANGEMENT OF HARDWARE STORES.

The arrangement of the store of C. Carr & Sons, 315 Division street, Chicago, is illustrated in the diagram, Fig. 212. The depth of the store is 90 feet, its width in front 18 feet and its width in the middle 23 feet. The shelving is made 10 inches

high and 2 feet wide, being supported by 24 rods bolted through joists, the lower ends passing through 2 x 4 cross pieces. These shelves are used for Hardware in original packages and are accessible by a ladder from either side. Their method of accommodating Planes is illustrated in Fig. 214. This shelving, which rests upon the ledge, is 10 inches deep. Beading, Molding, Grooving and Rabbeting Planes are placed on end with the blade edge out; Jack and Smoothing Planes with the tops out and small Smoothing Planes flat on shelves with the back end out. Spirit Levels occupy the top shelf of the center space.

The method of handling Rope, used with good results by John M. Spann, Malone, N. Y., is illustrated in the accompanying cut, Fig. 215. The Rope is kept in the cellar on a shelf next to the wall,

sink with a hinged cover forming the end of the counter, in which there is a pump by which the Oil is drawn up as required. The cover is the width of the counter and 2 feet 4 inches long. The sink is deep enough to hold measures, and the can to be filled. The waste Oil runs back, it will be observed, by a pipe leading into the tank. The neatness and cleanliness of this arrangement is one of the important advantages connected with its use, and the size of the tank is also referred to as permitting the emptying of several barrels of Oil at one time, so that the barrels can be shipped back without delay.

The accompanying cut, Fig. 217, represents a combined Shovel, Steel Goods and Horse Shoe rack, designed by A. M. Smith, Pike, N. Y. This rack is 10 feet high, the base being 6 feet wide and 3 feet 6 inches deep. D-handled goods hang upon

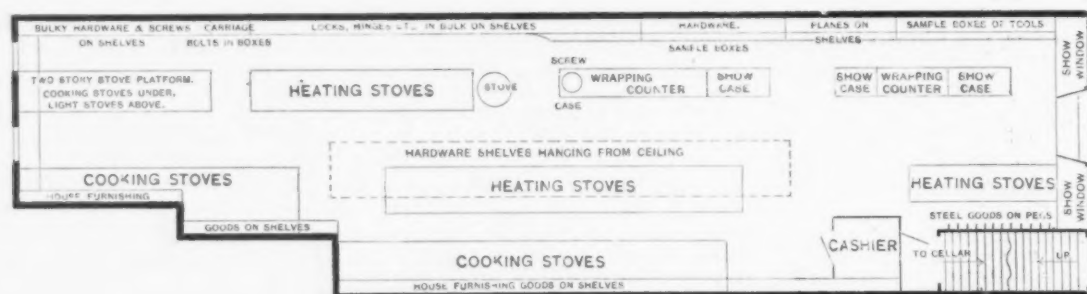


Fig. 212.—Arrangement of Store of C. Carr & Son, Chicago.

deep, the depth of the counter or ledge under the Hardware shelving being 19 inches, and the height of this ledge over the floor 3 feet. In this store an attempt has been made successfully to utilize all

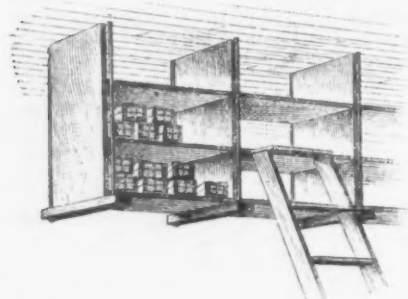


Fig. 213.—Hanging Shelving.

available space for the stowage or exhibition of goods to excellent advantage. The shelving extends all around the room, which is 13 feet high, running up to within 3 feet of the ceiling. A wide board forms the top of the shelving which is used for bulky but light goods, leaving very little

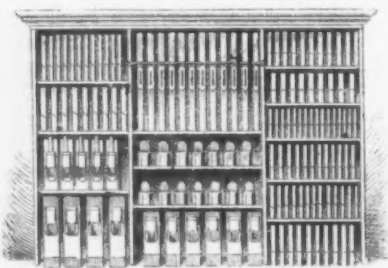


Fig. 214.—Case for Planes and Levels.

unappropriated space. Such goods as can be so kept are stored in the basement of this building and the basements of the two adjoining buildings. Fig. 213 represents their hanging shelves, the location of which is indicated on the diagram. They are 30 feet long, 3 feet

and under the portion of the store where it is sold. The ends of the different sizes of Rope are drawn through the floor behind the counter, as shown, an arrangement which is referred to as having the advantage that all sizes can be conveniently exhibited to a customer and the desired size measured off and delivered without encumbering the storeroom with the stock.

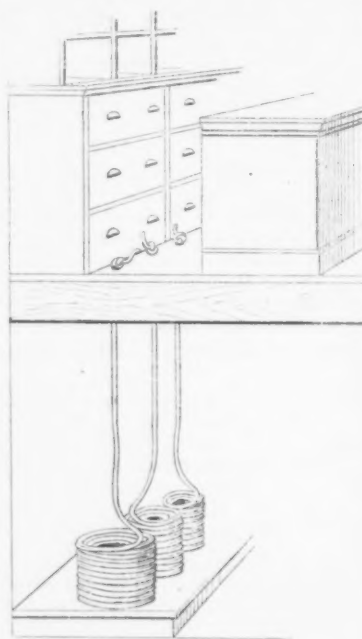


Fig. 215.—Arrangement of Rope.

When the Rope is not needed it will be observed that a knot is tied in the end which rests on the floor.

An unusual method of handling Oil is shown in the illustration, Fig. 216, for description of which we are indebted to George A. Hawley, Canaseraga, N. Y. The illustration requires but little explanation. The oil tank, holding 3 to 5 gallons of Oil, is in the cellar, and in the end of one of the counters in the store there is a

the upper row of pegs, these pegs being made of hard wood 1½ inches wide and 1½ inches thick. They are about 12 inches long and securely bolted in position. All long-handled goods, Shovels, Forks, Spades, &c., are below resting on the platform. It will hold, we are advised, from \$125 to \$150 worth of goods. The manner in which Horse Shoes are accommodated is indicated in the illustration. The arms on which they hang are 1½-inch turned hard wood bolted to standards with two ½-inch bolts. This rack is also used when the articles for which it is intended are out of season for other purposes, such as standing Barn-Door Track and other goods.

We are indebted to Charles W. Davis, successor to W. K. Davis & Co., of Wabash, Ind., for some of the methods employed by him in arranging stock in retail stove and hardware stores. He writes as follows:

I am interested in all new arrangements in showing goods in the hardware line, and also having them convenient for retailing. I have read with a good deal of satisfaction the various methods from all parts of the country and have adopted several of them. I will give one or two suggestions for the benefit of the trade. In selling floor oil-cloths we use a rack set in the shelving 66 inches wide, 12 feet high and 12 inches deep, made of 2-inch poplar. Rolls 2½ x 2½ inches are placed in this rack at distances apart to allow the full roll of oil-cloth or linoleum. This rack enables a person to show each pattern, and, if the ends of each roll are pulled out a little, it constantly shows the entire stock and draws the customers' attention to it. In retailing, pull off just what is needed and cut with shears or knife.

We keep our rope in the cellar on a rack, one roll above the other, the ends being run up through the floor in a row and fastened to wire spring catches on the end of the counter. The rack being inclined, the pieces of rope do not interfere with each other. On the end of the counter we have tacked up the weights and number of feet to the pound of the sizes of rope kept in stock. Our shelves are covered with doors hung to narrow strips with parlia-

mentary butts, the whole being painted red. The samples are hung or screwed fast in front of the same goods on the shelf. I think that this method beats drawers, in that every inch of space on the shelves can be used, and it keeps the goods in original packages, giving any information that is found on them. This way of sampling is

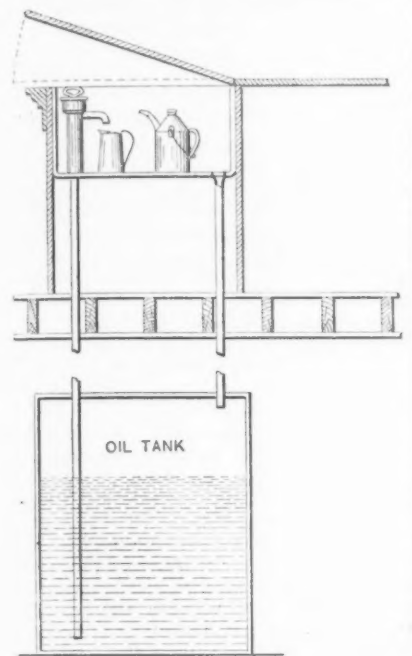


Fig. 216.—Method of Arranging Oil.

to be preferred, in that it does not cost much and looks well. We have used the bracket for steel goods as described by Mr. Strong, of Mt. Atkinson, Wis., for ten years; only the brackets are wood, and for slots we use iron pins. Where hardware men miss it is in advertising. The printer will call for copy, and we give him a

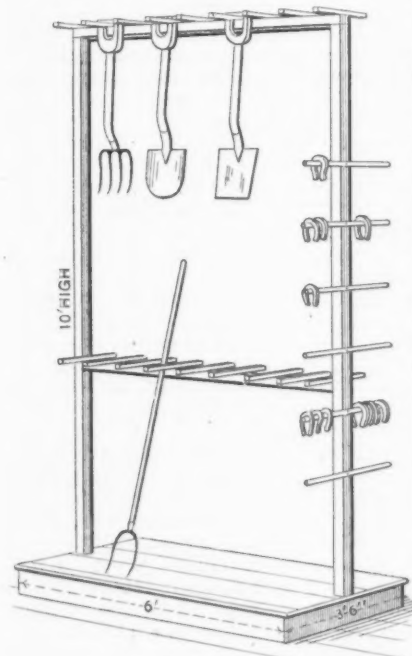


Fig. 217.—Shovel, Fork and Horseshoe Rack.

stereotyped "ad.," and at the end of a year he presents his bill. We make a big fuss about printers' bills always being excessive, &c., and do no good. The trouble is with us, we should never let the same "ad." appear more than twice; advertise the goods in their season. If you have a leader, men-

tion that; work in an item of public interest and apply to some branch of your trade. There are a great many things I could speak of in this connection, but will defer until another time. I should like suggestions from others in regard to judicious advertising.

TRADE TOPICS.

We take pleasure in laying before our readers the following, which comes to us from Joseph Ehart & Son Company, Fort Madison, Iowa. We shall be pleased to have an answer to our correspondent's inquiry from some of the manufacturers of the line of goods concerning which they write, or from others in the trade who can give information on this point:

We would like to have some manufacturer of Screw Strap Hinges explain to us why some change is not made in the classification of Screw Strap Hinges. We doubt whether many of the dealers throughout the land have ever considered such a change necessary, and probably it is not, but until we are so convinced we want to hear from the manufacturers and from the trade.

Sizes and Weights per dozen Pairs.

Weight per dozen pairs... 21 27 45 53 65 70 76 100
Inches..... 6 8 10 12 14 16 18 20
The above represents the lists of sizes and weights per dozen pairs. Below we give the list of sizes with net prices per dozen pairs figured at *Iron Age* quotations, viz.: 6 to 12 inches, 3 $\frac{3}{4}$ cents per pound, and all sizes larger than 12 inches at 2 $\frac{3}{4}$ cents per pound.

Inches..... 6 8 10 12 14 16 18 20
Net prices per dozen..... \$0.79 1.01 1.68 1.99 1.79 1.92 2.09 2.75
Now why is it that a 14-inch Hinge, which, of course, must be 2 inches longer than the 12 inch, and weighs 12 pounds more per dozen pairs, costs 20 cents per dozen less than the 12 inch. Again, why does the 16 inch cost 7 cents less per dozen than the 12 inch, when it weighs 17 pounds more per dozen. If the manufacturer is willing to sell the 6 and 8 inch at 79 cents and \$1.01 respectively, and the 14 and 20 inch at \$1.79 and \$2.75, why ought he to demand the exorbitant price for the 10 and 12 inch. In our opinion the "divide" should be made between the 8 and 10, instead of the 12 and 14; then the 6 and 8 would figure at 3 $\frac{3}{4}$, while the 10 inch and all larger sizes would come under the 2 $\frac{3}{4}$ price. This, we think, would give a better result, and would produce the following net prices:

Inches..... 6 8 10 12 14 16 18 20
Net prices revised..... \$0.79 1.01 1.24 1.46 1.79 1.92 2.19 2.75

One of the most unique business cards which has lately come under our notice is that of J. H. Hoard, of Frankfort, N. Y., dealer in stoves, hardware and kindred goods. The card is of a blue color, and measures 2 x 3 $\frac{1}{4}$ inches in size. Upon one side appears the name, address and business of Mr. Hoard, while the reverse has the following suggestive inscription:

How \$2000 WAS MADE.
By Attending to Your Own Business, \$1000
By Letting Other People's Business Alone, \$1000

THE SCRANTON FORGING COMPANY,
Scranton, Pa., successors to J. B. Savage, S. uthington, Conn., have issued an exceptionally neat and satisfactory catalogue, in which, for the convenience of the trade, they have blank interleaves for use in noting net prices, changes in list, memoranda, &c., a feature which will be appreciated by those who use the book. It represents their well-known line of goods, to which recent additions have been made, and gives illustrations of the different patterns, all of which, printed in a blue-black ink, are effectually represented. They call special attention to their Saddle Clip list, regretting that they have been compelled

to make a radical change in their catalogue numbers, the old list, by reason of their greatly increased variety of lengths, being inadequate without the excessive use of fractions. It is suggested that buyers refer to the "new list" or specify width and length of flat part, so that error or delay by reason of the change in list may be avoided. As the first list issued by the company in their new location, it will be regarded with especial attention. It is accompanied by the following discount sheet, which, it will be observed, is alphabetically arranged, and indicates the line of goods the company are making and the present prices.

Catalogue page.	Discount per cent.
25. Body Loop Ends, Single Lip, for $\frac{1}{4}$ or 5-16-inch Bolt, per doz., \$0.95.....	5
25. Body Loop Ends, Single Lip, for $\frac{3}{8}$ -inch Bolt, per doz., \$1.10.....	5
26. Body Loop Ends, Double Lip, for $\frac{1}{4}$ or 5-16-inch Bolt, per doz., \$1.35.....	5
26. Body Loop Ends, Double Lip, for $\frac{3}{8}$ -inch Bolt, per doz., \$1.50.....	5
26. Body Loops, Flanged, for $\frac{1}{4}$ or 5-16 inch Bolt, per doz., \$1.50.....	5
25. Body Loops, Finished, for 5-16 Bolt, 5-inch Drop, per set, \$0.75.....	net
25. Body Loops, Finished, for 5-16-inch Bolt, $\frac{5}{8}$ inch Drop, per set, \$0.90.....	net
25. Body Loops, Finished, for 5-16 inch Bolt, $\frac{6}{8}$ -inch Drop, per set, \$1.....	net
11. Bolts, Shackie, Milled 7-16 inch and under, per 100, \$2.25.....	5
40. Bolts, Whiffletree, Bent Pattern, per doz., \$0.36.....	net
73. Bolt Clippers.....	25
38. Braces, Cross Spring Body.....	35
37. 38. Brace, King Bolt and Yoke, Nos. 44, 63 and 55.....	25
28. Clips, Axle, Norway $\frac{1}{4}$ and 5-16 inch Shanks, 55&55&5	
28. Clips, Axle, Norway $\frac{3}{4}$ inch Shanks.....	5&10&5
29. Clips, Axle, Norway Concord Express.....	50&5
29. Clips, Axle, B Grade, Norway $\frac{1}{4}$ and 5-16 inch Shanks.....	65&5
29. Clips, Axle, B Grade, Norway $\frac{3}{4}$ inch Shanks.....	55&55&5
27. Clips, axle, Superior.....	66&5&5
32. Clips, Axle, Wide Center, Norway Iron.....	50&5
29. C lips Spring Bar, Norway Iron.....	60&5&5
31. Clips, Side Bar, Norway Iron.....	55&5&5
31. Clips, Side Bar, B Grade, Norway Iron.....	65&5
30. Clips, Sleigh, Norway Iron, full end pattern, 55&5&5	
30. Clips, Sleigh, Norway Iron, Wide Center.....	50&5
19. 20. Clips, Buggy Saddle with Plates $1\frac{1}{4}$, $1\frac{3}{4}$ and $1\frac{5}{8}$ Spr'g, doz. sets, \$1.50.....	5
19. 20. Clips, Buggy Saddle without Plates $1\frac{1}{4}$, $1\frac{3}{4}$ and $1\frac{5}{8}$ Spr'g, doz. pair, \$1.30.....	5
20. Clips, Buggy Saddle, with Plates $1\frac{1}{4}$ inch Springs, per doz. sets, \$2.70.....	5
20. Clips, Buggy Saddle, without Plates, $1\frac{1}{4}$ inch Springs, per doz. pair, \$2.55.....	5
22. Clips, Buggy Saddle, 2 piece for Double Perch, per doz. sets \$1.30.....	5
21. Clips, Brewster Saddle, Solid.....	66&5&5
23. Clips, Short Spring, -16 inch stems, per doz., \$0.75.....	5
23. Clips, Short Spring, $\frac{3}{4}$ inch stems, per doz., \$1.05.....	5
24. Clip Yokes, 3" D., \$0.05.....	net
7. Couplings, pole Unfinished.....	35&5
8. 9. Couplings, Pole Finished, $\frac{3}{8}$ and 1 inch, Light, per doz. pair, \$4.25.....	5
8. 9. Couplings, Pole Finished, 1 inch Heavy, per doz. pair, \$4.60.....	5
8. 9. Couplings, Pole Finished, $1\frac{1}{8}$ inch, per doz. pair, \$5.60.....	5
8. 9. Couplings, Pole Finished, $1\frac{1}{4}$ inch, per doz. pair, \$6.70.....	5
8. 9. Couplings, Pole Finished, $1\frac{3}{4}$ inch, per doz. pair, \$8.70.....	5
5. 6. Couplings, Shaft Unfinished.....	60&5
8. 9. Couplings, Shaft Finished, $\frac{3}{8}$ and 1 inch, Light, per doz. pair, \$3.75.....	5
8. 9. Couplings, Shaft Finished, 1 inch Heavy, per doz. pair, \$4.00.....	5
8. 9. Couplings, Shaft Finished, $1\frac{1}{8}$ inch, per doz. pair, \$5.10.....	5
8. 9. Couplings, Shaft Finished, $1\frac{1}{4}$ inch, per doz. pair, \$8.00.....	5
8. 9. Couplings, Shaft Finished, $1\frac{3}{4}$ inch, per doz. pair, \$8.00.....	5
11. Couplings, Parts, Clip Part.....	60&5
10. Couplings, Parts, Shaft and Pole Eyes.....	60&5
11. Couplings, Parts, Bolts.....	50&5
12. Couplings, Sleigh.....	40&5
32. Couplings, Side Bar Spring.....	50&5
71. 72. Corner Irons.....	35
10. Eyes, Shaft and Pole.....	60&5
24. Fellow Plates, 3" D., \$0.054.....	net
59. 60. Fifth Wheels, Brewster only.....	50&5
63. Fifth Wheels, Platform C1 c1e, 3" D., \$0.044.....	net
55 to 63. Fifth Wheels, all others.....	45&5
31. Joints, Finished Top, 9-16 Oval Black, per set, \$0.75.....	5
34 Joints, Finished Top, 9-16 Oval Bright, per set, \$0.90.....	5
34 Joints, Finished Top, $\frac{5}{8}$ Oval Black, per set, \$0.85.....	5
31. Joints, Finished Top, $\frac{5}{8}$ Oval Bright, per set, \$1.....	5
31. Joint Ends, 9-16 Oval and 7-16 Round, per set, \$0.28.....	5
34. Joint Ends, $\frac{5}{8}$ Oval and $\frac{1}{2}$ Round, per set, \$0.30.....	5
34. Joint Ends, $\frac{3}{4}$ Oval, per set, \$0.38.....	5
31. Joint Ends, 9-16 Oval Extension, per set, \$0.42.....	5
34. Joint Ends, $\frac{5}{8}$ Oval Extension, per set, \$0.44.....	5
34. Joint Ends $\frac{3}{4}$ Oval Extension, per set \$0.57.....	5

13 to 18, King Bolts, Nos. 1, 2, 3, 4.				
13, 14, King Bolts, Plain.	\$1.70	\$1.70	\$2.30	\$3.30 .5
15, King Bolts, Plain, Finish-d.	2.00	2.00	2.50	3.60 .5
16, 17, King Bolts, Flanged.	2.25	2.25	2.75	4.00 .5
18, King Bolts, Flanged, Finish-d.	2.55	2.55	3.05	4.50 .5
41, King Bolt, Spur Head, 5 inches long and over, Black, Ea. \$0.00.				net
65 to 68, Offsets and Stay Ends, Nos. 1, 2, 3 and 7.				30&5
65 to 68, Offsets and Stay Ends, Nos. 4 and 6.				25&5
74 & 75, 6 x Shoes, per pound, \$0.09				net
41, Perch Ends, No. 17.				25
10, Pole Eyes.				60&5
64, Reach Plates, Single.				40&5
64, Reach Plates, Double.				35&5
70, Scroll Ends.				20
10, Shaft Eyes.				60&5
11, Shackle Bolts, Milled.				50&5
69, Shifting Rails.				30
12, Sleigh Brace Yokes.				25
39, Stay Brace Ends.				50
65 to 68, Stay Ends and Offsets, Nos. 1, 2, 3 and 7.				3&5
65 to 68, Stay Ends and Offsets, Nos. 4 and 6.				25&5
68, Stay End Ties.				25&10
54, Steps, Finished.				5
Steps, Timken Side Bar Pl. Pads	1	2	3	
per pair.	\$0.50	\$0.55	\$0.70	
Steps, Timken Side Bar Fancy Pads, per pair.	0.55	0.60	0.75	
Steps, Timken Body Plain Pads, per pair.	0.45	0.50	0.65	
Steps, Timken Body Fancy Pads, per pair.	0.50	0.55	0.70	
Steps, Brewster Body Plain Pads, per pair.	0.65	0.70	0.80	
Steps, Brewster Body Fancy Pads, per pair.	0.70	0.75	0.85	
Steps, End Spring Body Fancy Pads, per pair.	0.70	0.75	0.85	
Steps, Phaeton Body Fancy Pads, per pair.		0.75	0.85	
Steps, Phaeton Body, 4 1/2 inch round, \$0.75, 5 inch round, \$0.85 per pair.				.5
Steps, Surrey Body Fancy Pads, No. 3, \$0.95; 4, \$1.05; 5, \$1.20.				5
42 to 53, Step Pads, Norway Square, per dozen pair, 5&5 per cent discount.				
Nos. 0 & 1 2 3 4 5				
London.	\$4.00	\$4.40	\$5.50	\$6.75 \$9.90
All other Fancy Patterns, per doz. pair.	3.80	4.10	5.25	6.40
Plain Patterns, per dozen pair.	2.65	2.90	4.10	5.25 7.60
Step Pads, Refined square 5&5 & discount. Fancy Patterns, per doz. pair.	2.90	3.30	4.50	5.75
Plain Patterns, per dozen pair.	2.25	2.60	3.85	
Step Pads, Round.				4 1/2 in. 5 in.
*Norway Fancy per doz. pair.				\$4.70 \$5.50 5&5
Norway Plain, per doz. pair.				4.10 5.00
*Refined Fancy, per dozen pair.				3.80 4.70
Refined Plain, per doz. pair.				3.50 4.40
*Amesbury Open Pattern, \$0.25 per doz pair extra.				net
33, Stump Joints, No. 1.				30&5
33, Stump Joints, No. 2.				35&5
33, Stump Joints, No. 3.				40&5
73, Whiffletree Couplings.				25
35, Yokes, King Bolt, Collar Pattern, per doz.				\$1
Yokes, King Bolt, Collar Pattern, with thread and nuts, per doz.				\$1.30
35, 36, Yokes, King Bolt and Braces, Light, per doz.				\$2
36, Yokes, King Bolt and Braces, Heavy, per doz.				\$2.50
12, Yokes, Sleigh Brace.				25
24, Yokes, Wrought Clip, per pound.				\$0.06 net

KEEPING POSTED.

We have received from B. H. Newell & Co., Shelburne Falls, Mass., the following suggestions in regard to the care of catalogues, price lists, &c., which we take especial pleasure in laying before our readers, referring as the writers do to the importance of the Hardwareman's being thoroughly informed in regard to the prices of goods even a little outside of his regular line, while at the same time they show how this can be successfully done. We have no doubt that the great majority of Hardwaremen lose many sales and a considerable profit from their inattention to this matter:

We have given some attention to the arrangement of price lists, circulars, &c., and have devised a plan which we find quite satisfactory. We use patent binders for all catalogues from 4 x 6 to 8 x 12 inches, designating each binder by a letter. For small catalogues and circulars we use 14 of the pigeon-holes in our roll-top office desk, designating each pigeon-hole by a numeral. We then index all articles not carried in our regular stock (also some that we do carry), giving the name of the firm or firms making the article, the letter of the binder which contains the catalogue, and the page in the catalogue, or the number of the pigeon-hole where the catalogue or circular will be found. The following is a specimen entry in our index:

Article.	Kind.	Binder.	Page.	Pigeon-hole.
Belcher & Taylor Ag'l Tool Co.	A—Hinge—Geddes—Square—Clipper Smoothing—Shares—Rotary—Randall Wheel—La Dow—Wheel—Yankee	E	31-38	
Ames Plow Co.	Shares—Geddes—Hinge—A—Warrior Disc—Thomas Smoothing	E	12-13-14	
Geo. Tyler & Co.	Climax Wheel			12
Keystone Mfg. Co.	Keystone Disc.	E		
H. Ganum Mfg. Co.	Square—Geddes—Shares—Clark's	E		
Parker & Wood.	Thomas Smoothing—La Dow—Yankee—Thomas—Shares—A.	A	133 to 135	
B. L. Bragg & Co.	Evans—Shares—La Dow	A	76 to 77	
Nash & Bro.	Acme	A		
Crandall & Morrisson	Smoothline	A	9	
Herendeen Mfg. Co.	Spring Tooth—Thomas Smoothing.	A		
New York State Ag'l Works.	Spring Tooth—La Dow	A	14 & 15	

By this system we can tell at a glance whether we can give a customer information regarding a Harrow which he inquired for, but which we do not keep in stock. Also, where to find the information and all about it. We think we hear some Hardwareman exclaim "Nonsense, what is the use of going to all that trouble. I can carry all these matters in my head, and such an index is a waste of time and expense." In answer, all that we have to say is that it pays, and we are in the business to make a dollar. Many of those dollars are or ought to be made by sending for those thousand and one articles which are called for but not carried in stock, owing to a limited demand. In order to secure business a merchant must have his lists so arranged as to be able to find them without keeping his customer waiting from 5 to 20 minutes while he is searching through a stack of from 50 to 500 lists. It has paid us to index all these articles from Calf Weaners to Creameries, and from Sausage Stuffers to Horse Powers. We believe it will pay every Hardwareman situated in such a territory as we are to do the same. Odd minutes and rainy days will, with your assistance, complete the index and keep it correct, and when trade is rushing you will find that your time has not been wasted.

We also find that this system assists us in buying, as it gives the name of the manufacturers or firm dealing in the article wanted, and we can tell at a glance from what place the goods ought to be bought to the best advantage, on account of freight rates, &c., other things being equal.

The Coke Trade.

The situation in the coke trade has not improved, nor is it any worse. The price obtained at the present time is \$1 per ton, and while a few small sales have been made as low as 85 cents, they cannot be considered as having any effect on the price quoted. A slight improvement in the demand will probably take place in the course of a few weeks, as a number of idle furnaces in the Mahoning valley have resumed operations, and as soon as their present stock of coke is exhausted they will be in the market for more. As to when there will be any improvement in price it is impossible to state, certainly not until some arrangement has been made to stop the cutting that is now going on at such a lively rate. The coke syndicate, which was so successful for four years, is a thing of the past, and with no prospect of another being formed for some time. The operators are now realizing the great mistake they made in putting up prices from \$1.50 per ton to \$2 per ton, and it is safe to say that should another syndicate be formed its members will be more prudent than they have been in the past when they commence to consider the advisability of making an advance.

The shipments for March were 18,625 cars, or just 1100 cars short of the corresponding month of last year when coke was \$2 per ton. The figures for preceding months were as follows: February, 18,500; January, 20,225; December, 25,200. The March shipments were marketed as follows: West of Pittsburgh, 12,000 cars; east of Connellsville, 4000; Pittsburgh and rivers, 2625. The totals for the previous month were: West, 10,500; East, 4500; Pittsburgh, 3500. The increase

West was due to heavy shipments to the Union Steel Company and the Joliet Steel Company, at Chicago, when the railroad strike at that place was at its height and fears of a tie-up were entertained. The majority of the small operators in the region have closed down their ovens, and are out of the market. The few that have kept their ovens in operation are turning their coke over to the J. M. Schoonmaker Coke Company and J. W. Rainey, who are marketing it for them at \$1 per ton. By reason of this, the shipments of these two firms have increased very much during the past month, being considerably larger than any other firm in the region with the exception of the H. C. Frick Coke Company, which concern controls more ovens than any other two firms in the region. Of the 12,468 ovens in the region, 4010 are idle, or nearly one-third of the entire number. The H. C. Frick Coke Company are operating 2646 ovens out of 3728; McClure & Co. are operating 561 out of 1356; the Connellsville Coke and Iron Company, 800 out of 1000; the J. M. Schoonmaker Coke Company, 845 out of 1096; members of the old Producers' Association, 759 out of 1377; independent operators, 1886 out of 2480; furnace ovens, 1061 out of 1431. The difference in the situation now and that of one year ago will be realized at once when it is known that at this time last year all the ovens in the region, with the exception of possibly 500, were in full operation, and coke was sold as fast as made at \$2 per ton.

The first annual meeting of the Bessemer Consolidated Iron Company was held at Milwaukee on the 10th instant. The stockholders, most of whom were represented by proxy, elected the following directors: Daniel McGarry, of Cleveland; John E. Burton, Prof. Raphael Pumpelly, of Newport, R. I.; E. W. Oglebay, of Cleveland; Charles E. Coon, of New York; J. J. McGill, of Steubenville; W. D. Rees, of Cleveland, and Moses H. Brand and John A. Kennedy, of Milwaukee. A resolution was adopted to establish a branch office at Cleveland. The new board elected Daniel McGarry president, J. E. Burton vice-president, and C. E. Coon secretary and treasurer. The latter will only serve temporarily, however.

The Anthony Wayne Mfg. Company, Fort Wayne, Ind., in order to increase the facilities for the manufacture of their washer, will soon add another floor, 45 x 80 feet, which is now occupied by Rhinesmith & Simonson for mill purposes, to their factory. They will then be able to increase their capacity from 60 to 100 machines per day, and will be in a position to fill orders more promptly than they have been able to do recently.

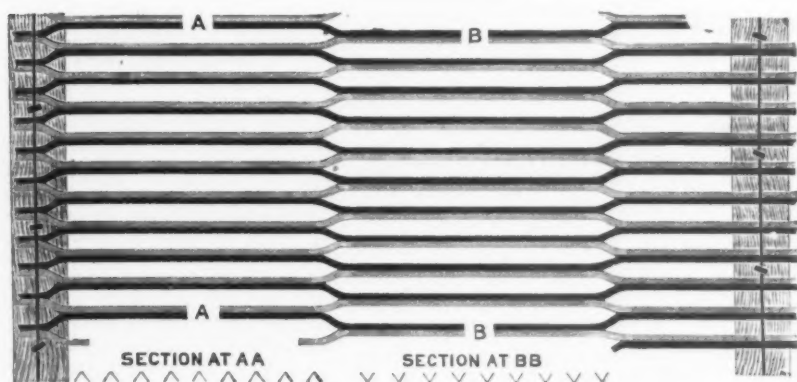
Under the charge of Mr. David Thomas, until recently connected with the Troy plant, the furnaces of the Thomas Iron Company are doing very good work. Last week they produced 855 tons of No. 1 foundry, 894 tons of No. 2 foundry, and 1264 tons of hard iron. For a long period during the last year the percentage of hard iron ran up to an average of 70 per cent.

New Sheet-Metal Lath.

Hodges Brothers, Detroit, Mich., have just brought out a sheet-metal lath, illustrated in the accompanying cut. It is

required by the size of mesh in the pattern, and each set having six to a dozen knives, according to the width of the sheet of metal. As the metal passes through this section it is cut by each set of knives

to a very small space, the rows of strips are corrugated or alternately bent upward and outward; at the same time the spaces in the strips are widened so that they assume the shape of elongated diamonds. The strips, which before could be easily bent, are now, by their V-shaped form, greatly strengthened.



New Fire-Proof Sheet-Metal Lath.

known in the trade as Kinney's patent. It is claimed, in point of stiffness, clinch and economy in plastering that it has never been surpassed by any lath ever introduced. It will be seen by

reference to the above cut that, although the metal is slitted and then corrugated and finally opened, the whole remains one integral sheet, the strips of which are alternately upright and in inverted V shapes. In presenting this lath to the public the makers mention the following points of superiority. It can be readily applied by any intelligent laborer, simply because of its stiffness and bridging quality, which adapt it to span a space of 16 inches from center to center, and at the same time maintain a sufficiently strong lateral pressure. No furring is required in the use of this article, since the mortar clinches sufficiently when the lath is fastened directly to studding or joists. Plaster is much easier placed upon ceilings or walls with this lath than with wire cloth, and very little labor is necessary in accomplishing the work. Much time is saved in plastering with the use of this lath, since in fair weather the second coat can be laid on in a day after applying the first coat. A smaller quantity of mortar covers a greater space than when ordinary wire cloth is employed. The plastering is much stronger after setting, and the clinch is so direct that the walls and ceilings, it is claimed, will last as long as the building, unless violence is used to remove the plaster. The lath is claimed to be of great value in plastering outside walls of buildings, because of its stiffness and the superior clinch it affords. It may be used with cement mortar, thus securing a structure practically fire-proof at a moderate cost. A very elaborate machine has been produced for the manufacture of this lath, weighing no less than 18 tons. The first section into which the plain sheets of metal are introduced contains two sets of knives, each knife being from 2 to 8 inches long, as

alternately, so as to leave several rows of $\frac{1}{4}$ to 1 inch wide strips, the cuts or divisions of one row coming opposite the center of the strips of the adjoining rows.



The "Scarborough" Coal Box.

The metal then passes to the next section, which stamps a series of crimps across it. It then goes to a press, where by a series of movable dies, which can be adjusted

Novelties in Coal Boxes.

We recently showed some new designs in coal boxes, made in England, and this week we present another and more ambitious form, and one which we think is altogether a novelty on this side of the water. It is known in the catalogue before us as the Scarborough. As will be seen, it is in the form of a handsome three tier what-not, having square columns. The front panel of the coal box proper is suitably relieved with carving. We learn from the trade matter published in our English exchanges that many of the wood coal boxes of this form the present season are fitted with folding doors so adjusted as to readily open by the mere act of pushing back the handle fixed at the top. This ingenious arrangement, we are assured, is very highly appreciated.

Candle Lantern.

The Comet Lantern Company, Third and Cumberland streets, Philadelphia, Pa., are putting on the market a new candle lantern. It is made entirely of cast iron, except chimney, tin smoke-bell and wire handle. By reference to the engraving it will be noticed that the candle holder is inserted at the bottom of the base, avoiding the necessity of raising or lowering the chimney. It is cast in one piece and locked



Candle Lantern.

firmly into a base of the same material (iron). The manufacturers claim that it may be used with absolute safety and freedom from smoke and smell. They also call attention to its durability, no solder being used. The chimney is supported at the bottom as shown in the engraving, and at the top by the spread of the wire handle, the smoke-bell limiting it to the required pressure, thus holding the chimney securely. The wire handle is riveted to the base, which is bronzed. This lantern is referred to as a neat, substantial and useful article, afforded at a very moderate price.

The Philadelphia (Westinghouse) Natural Gas Company, of Pittsburgh, are now engaged in the design and manufacture of a meter to be used for the measurement of natural gas. The company expect to furnish them to their patrons during the present summer.

A New Tricycle.

The Chieftain Hay Rake Company, Canton, Ohio, are putting on the market the tricycle represented in the accompanying illustration. It is designated as Kohler's Adjustable Boys' Tricycle, and is made under the patent of April 12, 1888. The seat allows an adjustment of 5 inches, which is readily made, the seat being held securely in any position within this range. To raise or lower it the set screw on the backbone under the rear of the saddle and the one in collar just below the handle on the fork stem are loosened, when the handle is pushed up or down, the saddle moving with it, to any desired position, when by

very simple. The spindle with which the tape is connected is attached rigidly at one end, while it revolves freely in the case at the other end. This permits the line to be wound up by turning one side of the case, an operation which is readily performed, either by the finger directly or by a pencil or other instrument inserted in a small hole provided for that purpose. Goods are made en-



Kohler's Adjustable Boys' Tricycle.

tightening the set screw it is firmly held. This is alluded to as a great advantage to both buyer and seller; to the seller because fewer sizes need be kept in stock, to the buyer because the boy will not outgrow it for years. The machine is made in two sizes, the front wheels being 18 or 20 inches in diameter and the rear wheel 12 or 14 inches.

A New Tape Line.

A new tape line is being put on the market by S. A. Haines, 90 Chambers street, New York, which embodies features which are not found in those with which the trade are familiar. Of this tape three

ties of metal, with the exception of the line, so that they are especially durable and not liable to be injured by moisture. They are handsomely nickel plated, so as to present an exceedingly neat appearance, and the point is made that there being no springs about them they are not liable to get out of order. When the old line is worn out the case can easily be opened and a new line inserted. That they are of smaller size for the same length of line than the regular goods is also mentioned, as well as the fact that they can be retailed at popular prices.



A New Tape Line, 50 Feet, Full Size.

sizes are now made, 3, 5, and 50 foot, and other sizes will soon be added. An illustration of a 50-foot line is given herewith, the cut representing it full size. These goods, except the line itself, are made entirely of metal, and the construction is

Gillig's American Exchange in London is reported to have become insolvent, with

liabilities amounting to the large sum of \$4,000,000, principally due to depositors on letters of credit issued all over the world. Judge Comstock, of this city, on Friday, appointed Wm. C. Boone receiver. The assets are valued at an amount not

exceeding \$50,000. The stockholders will probably suffer as well as the numerous victims, whose letters will be discredited, often under embarrassing circumstances.

The Improved Anthony Wayne Washer.

The Anthony Wayne Mfg. Company, Fort Wayne, Ind., have recently made some important modifications in their washer, which in its present form is represented in the accompanying illustration. The first improvement consists in the changing of the half-circular gear wheel of the old style machine to a full wheel on the improved machine, so as to make a stronger, more substantial and durable gearing than the half wheel, and also allow the handle to be worked from either side of the machine or over the top of the same, as it suits the operator, whereas in the old style machine it could only be worked from one side. Second, the fulcrum of the handle, which on the old machine is about 2½ inches from the center of the gudgeon of the main arch to the one side, is on the improved machine brought exactly over this gudgeon and only about 1½ inches from the center thereof, thus insuring a shorter leverage, and thereby, of course,



The Improved Anthony Wayne Washer.

an easier motion and a less strain on the handle arch. Third, the crate, which in the old machine was even with the top of the staves, has been lowered ¼ inch in the improved machine, thus preventing the water, which by the force and motion of the agitator is apt to be forced through crevices onto the top, especially if the machine contains too much water, from slopping over the sides of the tub, and permits it to run back into the same through such holes as are cut for that purpose. Fourth, instead of the button to hold the crate in the tub, which was used on the old style machine, a crate hasp, manufactured expressly for them by the Stanley Works, of New Britain, Conn., has been adopted, which holds the crate firmly in its place and makes a very strong, substantial fastening. The company have lately placed some new and improved machinery for sawing and jointing staves and two sanders for smoothing and polishing machines, so that they are now able to turn out a better made and smoother and better looking machine than ever before. The company refer to the value of these improvements and to the appreciation of the trade as shown in the large demand, to meet which they are enlarging their manufacturing facilities.

APRIL 18, 1888.

World's Best, # gross, No. 1, \$12.00; No. 2, \$24.00.
No. 3, \$36.00.
Universal, # gross, No. 1, \$12.00; No. 2, \$24.00.
Domestic, # gross, No. 1, \$12.00; No. 2, \$24.00.
Champion, # gross, No. 1, \$12.00; No. 2, \$24.00.

Cards.
Horse and Curry, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cotton, # gross, No. 1, \$12.00; No. 2, \$24.00.
Wool, # gross, No. 1, \$12.00; No. 2, \$24.00.

Carpet Stretchers.
Cast Steel, Polished, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cast Iron, Steel Points, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bullard's, # gross, No. 1, \$12.00; No. 2, \$24.00.

Carpet Sweepers.
Bissell No. 5, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bissell No. 7 New Drop Pan, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bissell Grand, # gross, No. 1, \$12.00; No. 2, \$24.00.
Grand Rapids, # gross, No. 1, \$12.00; No. 2, \$24.00.
Crown Jewel, # gross, No. 1, \$12.00; No. 2, \$24.00.
Magic, # gross, No. 1, \$12.00; No. 2, \$24.00.
Jewel, # gross, No. 1, \$12.00; No. 2, \$24.00.
Mystic, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cottrell, # gross, No. 1, \$12.00; No. 2, \$24.00.
Garland, # gross, No. 1, \$12.00; No. 2, \$24.00.
Parlor Queen, # gross, No. 1, \$12.00; No. 2, \$24.00.
Housewife's Delight, # gross, No. 1, \$12.00; No. 2, \$24.00.
Queen, # gross, No. 1, \$12.00; No. 2, \$24.00.
Queen, with band, # gross, No. 1, \$12.00; No. 2, \$24.00.
King, # gross, No. 1, \$12.00; No. 2, \$24.00.
Wood Improved, # gross, No. 1, \$12.00; No. 2, \$24.00.
Hub, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cog Wheel, # gross, No. 1, \$12.00; No. 2, \$24.00.

Whirligigs.—See Ammunition.
Casters.
Red, # gross, No. 1, \$12.00; No. 2, \$24.00.
Plate, # gross, No. 1, \$12.00; No. 2, \$24.00.
Shallow Socket, # gross, No. 1, \$12.00; No. 2, \$24.00.
Deep Socket, # gross, No. 1, \$12.00; No. 2, \$24.00.
Yale Casters, list May, 1888, # gross, No. 1, \$12.00; No. 2, \$24.00.
Yale, Gem, # gross, No. 1, \$12.00; No. 2, \$24.00.
Merrill's Patent (No. 1), # gross, No. 1, \$12.00; No. 2, \$24.00.
Payson's Anti Friction, # gross, No. 1, \$12.00; No. 2, \$24.00.
"Giant" Truss Casters, # gross, No. 1, \$12.00; No. 2, \$24.00.
Stationary Truss Casters, # gross, No. 1, \$12.00; No. 2, \$24.00.

Cattle Leaders.
Humason, Beckley & Co.'s, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bargent's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Hochkies, # gross, No. 1, \$12.00; No. 2, \$24.00.
Peck Stow & W. Co., # gross, No. 1, \$12.00; No. 2, \$24.00.

Chains.
Trace, 6-16-2, exact sizes, # pair, \$1.00; # gross, \$10.00.
Trace, 6-16-2, exact sizes, # pair, \$1.00; # gross, \$10.00.
Trace, 7-10-2, exact sizes, # pair, \$1.11; # gross, \$11.11.
NOTE.—Traces, "Regular" sizes 3¢ net # pair less than exact.

Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1888, # gross, No. 1, \$12.00; No. 2, \$24.00.
American Coll. # 1, # gross, No. 1, \$12.00; No. 2, \$24.00.
In case lots, 9.00 6.30 5.25 4.00 4.40 4.20 3.95 3.75
Less than case lots, add 1¢ per lb.
German Coll. list of June 20, 1887, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ger. Halter Chain, list of June 20, 1887, # gross, No. 1, \$12.00; No. 2, \$24.00.

Covert Halters, Hitching and Breast.
Covert Halters, # gross, No. 1, \$12.00; No. 2, \$24.00.
Onedra Halter Chain, # gross, No. 1, \$12.00; No. 2, \$24.00.
Garvalized Pump Chain, # gross, No. 1, \$12.00; No. 2, \$24.00.
Jack Chain, Iron, # gross, No. 1, \$12.00; No. 2, \$24.00.
Jack Chain, Brass, # gross, No. 1, \$12.00; No. 2, \$24.00.

Chalk.
White, # gross, No. 1, \$12.00; No. 2, \$24.00.
Red, # gross, No. 1, \$12.00; No. 2, \$24.00.
Blue, # gross, No. 1, \$12.00; No. 2, \$24.00.
White Crayon, # gross, No. 1, \$12.00; No. 2, \$24.00.

Chalk Lines.—See Lines.

Chisels.
Socket Framing and Firmer—
P. S. & W., # gross, No. 1, \$12.00; No. 2, \$24.00.
New Haven and Middlesex, # gross, No. 1, \$12.00; No. 2, \$24.00.
Mix, # gross, No. 1, \$12.00; No. 2, \$24.00.
Buck Bros., # gross, No. 1, \$12.00; No. 2, \$24.00.
Merrill, # gross, No. 1, \$12.00; No. 2, \$24.00.
L. & J. White, # gross, No. 1, \$12.00; No. 2, \$24.00.
Witherby and Douglass, # gross, No. 1, \$12.00; No. 2, \$24.00.
Tanged Firmers, # gross, No. 1, \$12.00; No. 2, \$24.00.
Tanged Firmers, Butcher's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Tanged Firmers, Spear & Jackson's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Tanged Firmers, Buck Bros., # gross, No. 1, \$12.00; No. 2, \$24.00.
Cold Chisels, # gross, No. 1, \$12.00; No. 2, \$24.00.

Chisels.
Beach Patent, # gross, No. 1, \$12.00; No. 2, \$24.00.
Morse's Adjustable, # gross, No. 1, \$12.00; No. 2, \$24.00.
Danbury, # gross, No. 1, \$12.00; No. 2, \$24.00.
Syracuse, # gross, No. 1, \$12.00; No. 2, \$24.00.

Clamps.
Providence Tool Co.'s Wrought Iron, # gross, No. 1, \$12.00; No. 2, \$24.00.
Adjustable, Gray, # gross, No. 1, \$12.00; No. 2, \$24.00.
Adjustable, Lambert's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Adjustable, Snow's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Adjustable, Hammer's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Adjustable, Stearns', # gross, No. 1, \$12.00; No. 2, \$24.00.
Stearns' Adjustable Cabinet and Corner, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cabinet, Sargent's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Carriage Makers', Sargent's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Eberhard Mfg. Co., # gross, No. 1, \$12.00; No. 2, \$24.00.
Warner's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Saw Clamps, # gross, No. 1, \$12.00; No. 2, \$24.00.

Clips.
Norway, Axle, 1/4 & 5-16, # gross, No. 1, \$12.00; No. 2, \$24.00.
Second grade Norway Axle, 1/4 & 5-16, # gross, No. 1, \$12.00; No. 2, \$24.00.
Superior Axle Clips, 5-16, # gross, No. 1, \$12.00; No. 2, \$24.00.
Norway Spring Bar Clips, 5-16, # gross, No. 1, \$12.00; No. 2, \$24.00.
Wrought Iron Felloe Clips, # gross, No. 1, \$12.00; No. 2, \$24.00.
Steel Felloe Clips, # gross, No. 1, \$12.00; No. 2, \$24.00.

Cockeyes.
Cocks, Brass, # gross, No. 1, \$12.00; No. 2, \$24.00.
Hardware list, # gross, No. 1, \$12.00; No. 2, \$24.00.

Coffee Mills.
Box and Side, list revised Jan. 1, 1888, # gross, No. 1, \$12.00; No. 2, \$24.00.
American, enterprise mfg. co., # gross, No. 1, \$12.00; No. 2, \$24.00.
The "Swift" Lane Bros., # gross, No. 1, \$12.00; No. 2, \$24.00.

Compasses, Dividers, &c.
Compasses, Callipers, Dividers, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bemis & Call Co.'s Dividers, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bemis & Call Co.'s Compasses & Callipers, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bemis & Call Co.'s Wing & Inside or Outside, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bemis & Call Co.'s Double, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bemis & Call Co.'s (Call's Patent Inside), # gross, No. 1, \$12.00; No. 2, \$24.00.
Excelsior, # gross, No. 1, \$12.00; No. 2, \$24.00.
J. Stevens & Co.'s Callipers and Dividers, # gross, No. 1, \$12.00; No. 2, \$24.00.

Coopers' Tools.
Bradley's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Barton's, # gross, No. 1, \$12.00; No. 2, \$24.00.
L. & J. White, # gross, No. 1, \$12.00; No. 2, \$24.00.
Albert Mfg. Co., # gross, No. 1, \$12.00; No. 2, \$24.00.
Beatty's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Sandusky Tool Co., # gross, No. 1, \$12.00; No. 2, \$24.00.

Corkcrows.
Humason & Beckley Mfg. Co., # gross, No. 1, \$12.00; No. 2, \$24.00.
Houma's Patent, # gross, No. 1, \$12.00; No. 2, \$24.00.
Hove Bros. & Halbers, # gross, No. 1, \$12.00; No. 2, \$24.00.

Corn Kernels and Cutters.
Bradley's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Wadsworth's, # gross, No. 1, \$12.00; No. 2, \$24.00.

Cradles.—Grain.
Cradles, # gross, No. 1, \$12.00; No. 2, \$24.00.
Crown Bars, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cast Steel, # gross, No. 1, \$12.00; No. 2, \$24.00.
Iron, Steel Points, # gross, No. 1, \$12.00; No. 2, \$24.00.

Curry Combs.
Curry Combs, # gross, No. 1, \$12.00; No. 2, \$24.00.
Fitch's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Rubber, # gross, No. 1, \$12.00; No. 2, \$24.00.
Perfect, # gross, No. 1, \$12.00; No. 2, \$24.00.

Curling Pins.
Silver or Glass, # gross, No. 1, \$12.00; No. 2, \$24.00.
White Enamel, # gross, No. 1, \$12.00; No. 2, \$24.00.
Curling Pins, # gross, No. 1, \$12.00; No. 2, \$24.00.

Dampers, &c.
Dampers, Buffs, # gross, No. 1, \$12.00; No. 2, \$24.00.
Dusts, Dampers, # gross, No. 1, \$12.00; No. 2, \$24.00.
Crown Dampers, # gross, No. 1, \$12.00; No. 2, \$24.00.
Excelsior, # gross, No. 1, \$12.00; No. 2, \$24.00.

Dividers.—See Compasses.

Doors.
Torrey's Rod, regular size, # gross, No. 1, \$12.00; No. 2, \$24.00.
Gray's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bee Rod, # gross, No. 1, \$12.00; No. 2, \$24.00.
Warner's No. 1, # gross, No. 1, \$12.00; No. 2, \$24.00.
Gem Coll., list April 19, 1888, # gross, No. 1, \$12.00; No. 2, \$24.00.
Star Coll., list April 19, 1888, # gross, No. 1, \$12.00; No. 2, \$24.00.
Victor Coll., # gross, No. 1, \$12.00; No. 2, \$24.00.
Champion Coll., # gross, No. 1, \$12.00; No. 2, \$24.00.
Philadelphia, # gross, No. 1, \$12.00; No. 2, \$24.00.
Cowell's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Rubber, complete, # gross, No. 1, \$12.00; No. 2, \$24.00.
Hercules, # gross, No. 1, \$12.00; No. 2, \$24.00.
Shaw Door Check and Spring, # gross, No. 1, \$12.00; No. 2, \$24.00.
Elliott's Door Check and Spring, # gross, No. 1, \$12.00; No. 2, \$24.00.

Drumming & Blowing.
P. S. & W., # gross, No. 1, \$12.00; No. 2, \$24.00.
Mix, # gross, No. 1, \$12.00; No. 2, \$24.00.
New Haven and Middlesex, # gross, No. 1, \$12.00; No. 2, \$24.00.
Merrill, # gross, No. 1, \$12.00; No. 2, \$24.00.
Witherby and Douglass, # gross, No. 1, \$12.00; No. 2, \$24.00.
Watrous, # gross, No. 1, \$12.00; No. 2, \$24.00.
L. & J. White, # gross, No. 1, \$12.00; No. 2, \$24.00.
Bradley's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Adjustable Handle, # gross, No. 1, \$12.00; No. 2, \$24.00.
Wilkinson's Folding, # gross, No. 1, \$12.00; No. 2, \$24.00.

Drills and Drill Stocks.
Blacksmith's Self Feeding, # gross, No. 1, \$12.00; No. 2, \$24.00.
Breast, P. S. & W., # gross, No. 1, \$12.00; No. 2, \$24.00.
Breast, Wilson's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Breast, Millers Falls, # gross, No. 1, \$12.00; No. 2, \$24.00.
Breast, Bartholomew's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ratchet, Merrill's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ratchet, Ingersoll's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ratchet, Parker's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ratchet, Whitney's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ratchet, Weston's, # gross, No. 1, \$12.00; No. 2, \$24.00.
Ratchet, Moore's Triple Action, # gross, No. 1, \$12.00; No. 2, \$24.00.
Whitney's Hand Drill, Plain, # gross, No. 1, \$12.00; No. 2, \$24.00.
Wilson's Drill Stocks, # gross, No. 1, \$12.00; No. 2, \$24.00.
Automatic Boring Tools, # gross, No. 1, \$12.00; No. 2, \$24.00.

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Drilling Pans.
Small sizes, # gross, No. 1, \$12.00; No. 2, \$24.00.
Large sizes, # gross, No. 1, \$12.00; No. 2, \$24.00.

Drumming & Blowing.
P. S. & W., # gross, No. 1, \$12.00; No. 2, \$24.00.
Mix, # gross, No. 1, \$12.00; No. 2, \$24.00.
New Haven and Middlesex, # gross, No. 1, \$12.00; No. 2, \$24.00.
Merrill, # gross, No. 1, \$12.00; No. 2, \$24.00.
Witherby and Douglass, # gross, No. 1, \$12.00; No. 2, \$24.00.
Watrous, # gross, No. 1, \$12.00; No. 2, \$24.00.
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Drill Bits.—See Augers and Bits.

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Automatic Boring Tools, # gross, No. 1, \$12.00; No. 2, \$24.00.

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Flaring Machines.
Knox, 4-1/2 inch Rolls, # gross, No. 1, \$12.00; No. 2, \$24.00.
Knox, 6 inch Rolls, # gross, No. 1, \$12.00; No. 2, \$24.00.
Eagle, 3-1/2 inch Roll, # gross, No. 1, \$12.00; No. 2, \$24.00.
Eagle,

Best Anti-Friction.....dis 60
 Duplex (Wood Track).....dis 60
 Terry's Patent.....dis 60
 Cronk's Patent.....dis 60
 Wood Track Iron Clad.....dis 60
 Carrier Anti-Friction.....dis 60
 Archibald.....dis 60
 Richards.....dis 60
 Lane's Steel Anti-Friction.....dis 60
 The Ball Bearing Door Hanger.....dis 60
 Warner's Patent.....dis 60
 Stearns' Anti-Friction.....dis 60
 Stearns' Chaffice.....dis 60
 Faultless.....dis 60
 American.....dis 60
 Rider & Wooster, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Harness Snaps.—See Snaps.
 Hatchets.—List Jan. 1, 1888.
 Isalah Blood.....dis 35
 Hunt's Shingling Lath and Claw.....dis 40
 Hunt's Hammer Co.....dis 40
 Hurd's.....dis 40
 Fayette R. Pumps.....dis 40
 Wm. Mann, Jr., & Co.....dis 40
 Underhill & Son Tool Co.....dis 40
 Underhill's Haines and Bright goods.....dis 40
 C. Hammond & Son.....dis 40
 Simmons.....dis 40
 Peck's.....dis 40
 Kelly's.....dis 40
 Sargent & Co.....dis 40
 Ten Eyck Edge Tool Co.....dis 40
 Collins, following list.....dis 40
 Shingling, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

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 Screw Hook and Eye.....dis 18
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 N. E. Revere.....dis 18
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Pennsylvania.....	dis 40&105
doz.....	00
doz.....	\$24.00 28.00 30.00 28.00
Miles Challenge, No. 1 2	
doz.....	\$22.00 30.00 40.00—dis 45&45&10 1
Some No. 1.....	dis 45&45&10 1
Draw Cut, Nos. 1 2	
Each.....	\$20.00 75.00 90.00 225.00—dis 20 25 3
Beef Shavers Enterprise Mfg. Co., No. 1.....	dis 20&10 30 3
Chadborn's Smoked Beef Cutter.....	doz, \$60.00

Winding Knives.	
Am. 3d quality, 7 gro, 1 blade, \$7; 2 blades, \$12; 3 blades, \$15.....	dis 20 25 3
Lothrop's.....	dis 20&10 30 3
Smith's, w doz, Single, \$2.00; Double, \$3.....	dis 40&45 3
Buffalo Adjustable.....	doz \$3.00, dis 25 3

Melanes Gates.—Steebhus Pat.	dis 70&70 3 7 3
Steebhus' Patent.....	dis 70&70 3 7 3
Steebhus' Tinned Ends.....	dis 40&10 3
Chase's Hard Metal.....	dis 40&10 3
Brush's.....	dis 40 3
Lincoln's Pattern.....	dis 40&10 3
Wood's.....	dis 40&10 3

Money Drawers. —doz.....	\$18 20
Muzzles. —Safety, w doz.....	\$3.....

Nails. —See Trade Report	
Wire Nails and Brads list July 14, 87.....	dis 70 3
Wire Nails, Standard Penna.....	doz, \$2 80 2 85

Nail Puller. —Jartiss Hammer.....	doz \$3.00 net
Patent.....	doz \$3.00, dis 10 3
Pelican.....	doz \$3.00, dis 25 3
Boys.....	doz \$3.00, dis 30 3

Nail Sets. —Square.....	gro, \$4.00 4 25
Round.....	gro, \$3.25
Canon's Diamond Point.....	gro, \$12 dis 20 3

Nut Crackers.	
Table (Hudson & Beckley Mfg. Co.).....	dis 40 3
Blake's Pattern.....	doz \$2.00, dis 10 3
Turner & Seymour Mfg. Co.....	dis 50 3

Nuts and Washers.	
Size.....	dis 10 3
Washers.....	dis 10 3
Nuts all kinds, 50 off list Jan. 1, 1888.....	dis 10 3
In lots less than 100 lb, 1/2 doz, add 1/2 1/2 boxes add 1/2 1/2 to list.	

Oakum.	
Government.....	doz \$1.50
U. S. Navy.....	doz \$1.50
Navy.....	doz \$1.50

Others. —Zinc and Tin.....	dis 65 3 4 3
Brass and Copper.....	dis 65 3 4 3
Valuable, Hammer's Improved, No. 1, \$3.00.....	dis 65 3 4 3
No. 2, \$4.50.....	dis 65 3 4 3
Valuable, Hammer's, Old Pattern, same list.....	dis 65 3 4 3
Prior's Patent or "Paragon" Zinc.....	dis 65 3 4 3
Prior's Patent or "Paragon" Brass.....	dis 65 3 4 3
Olmsted's Tin and Zinc.....	dis 65 3 4 3
Olmsted's Brass and Copper.....	dis 65 3 4 3
Broughton's Zinc.....	dis 65 3 4 3
Broughton's Brass.....	dis 65 3 4 3

Packing, Steam.	
Rubber.....	dis 60&10 3 60&10&10 3
Standard.....	dis 60&10 3 60&10&10 3
Extra.....	dis 60&10 3 60&10&10 3
N. Y. B. & P. Co., Standard.....	dis 60&10 3 60&10&10 3
N. Y. B. & P. Co., Empire.....	dis 60&10 3 60&10&10 3
N. Y. B. & P. Co., Salamander.....	dis 60&10 3 60&10&10 3
Jenkins' Standard.....	dis 60&10 3 60&10&10 3

Miscellaneous.	
American Packing.....	dis 10&10 3 11&10 3
Russia Packing.....	dis 10&10 3 11&10 3
Italian Packing.....	dis 10&10 3 11&10 3
Cotton Packing.....	dis 10&10 3 11&10 3
Fute.....	dis 10&10 3 11&10 3

Padlocks. —See Locks.	
Palls.	
Galvanized Iron.....	dis 10 3 12 3 14
Quarts.....	dis 10 3 12 3 14
Hill's Light Weight, w doz.....	\$2.75 3.00 3.25
Hill's Heavy Weight, w doz.....	3.00 3.25 3.75
Whiting's.....	2.75 3.00 3.25
Sidney Shepard & Co.....	2.67 3.00 3.25
Iron Clad.....	2.75 3.00 3.25
Fire Buckets.....	2.75 3.00 3.50
Fire Buckets, see Wall Buckets	

Indurated Fibre Ware.	
Star Pails, 12 qt.....	doz \$1 75
Fire, Stable and Mill, 15 qt.....	doz \$5.50

Penicils. —Faber's Carpenters.....	high list, dis 60 3
Faber's Round Gills.....	doz \$2.50
Dixon's Lead.....	doz \$4.50
Dixon's Lead.....	doz \$4.50
Dixon's Carpenters.....	dis 40&10 3

Picks.	
Railroad, 6 to 8, \$12.00; 8 to 7, \$12.....	dis 60 3 60&10 3
Adze, 6 to 8, \$12.00; 8 to 7, \$12.....	dis 60 3 60&10 3

Picture Nails.	
Brass Head, Sargent's list.....	dis 50&10&10 3
Brass Head, Combination list.....	dis 50&10 3
Porcelain Head, Sargent's list.....	dis 50&10&10 3
Porcelain Head, Combination list.....	dis 50&10 3
Niles' Patent.....	dis 40 3

Pinking Irons.	doz 65 3 net
Pipe, Wrought Iron. —List March 23, 1887.....	
1 1/2 and under, Plain.....	dis 52 1/2 3
1 1/2 and under, Galvanized.....	dis 42 1/2 3
1 1/2 and over, Plain.....	dis 65 3
1 1/2 and over, Galvanized.....	dis 55 3
Boiler Tubes, Iron.....	dis 55 3

Planes and Plane Irons.	
Wood Planes.....	dis 50 3 50&10 3
Bench, First Quality.....	dis 50&10 3 60 3
Bench, Second Quality.....	dis 50&10 3 60 3
Bailey's Stanley R. & L. Co.....	dis 30&10 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
Steeb's Iron Planes.....	dis 55 3 35&10 3
Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Plane Irons.	
Plane Irons.....	dis 20&10 3
Plane Irons, Buck Bros.....	\$5.00 3 55 3
Plane Irons, Auburn Tool Co "Thistle".....	dis 30 3
Plane Irons, Middlesex Mfg. Co., "Baldwin" Iron.....	dis 20 3 25 3
Double.....	dis 25 3 30 3
L. & J. White.....	dis 25 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
Steeb's Iron Planes.....	dis 55 3 35&10 3
Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
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Victor Planes Stanley R. & L. Co.....	dis 20&10 3
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Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
Steeb's Iron Planes.....	dis 55 3 35&10 3
Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
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Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
Steeb's Iron Planes.....	dis 55 3 35&10 3
Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
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Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
Steeb's Iron Planes.....	dis 55 3 35&10 3
Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Planing.	
Bailey's (Stanley R. & L. Co.).....	dis 30&10 3 30&10&10 3
Melanes Planes Stanley R. & L. Co.....	dis 20&10 3
Victor Planes Stanley R. & L. Co.....	dis 20&10 3
Steeb's Iron Planes.....	dis 55 3 35&10 3
Meriden Planing Iron Co.....	dis 30&10 3 30&10&10 3
Davis' Iron Planes.....	dis 30&10 3 30&10&10 3
Birmingham Planing Iron.....	dis 50&10 3
Gage Tool Co's Self-Setting.....	dis 2 1/2 3

Gas Pliers.	dis 40 3
Gas Pliers, Hunter's Nickel Plated.....	dis 40 3
Eureka Pliers and Nippers.....	dis 40 3
Russell's Parallel.....	dis 25 3
P. S. & W. Cast Steel.....	dis 50 3
P. S. & W. Tinner's Cutting Nippers.....	add 5 3 dis 10 3
Carver's Pat. Wire Cutters.....	dis 20 3
Worrell's Parallel per doz.....	dis 50&10 3
Cronk's 8 in., \$15; 10 in., \$21.....	dis 40 3

Plumbs and Levels.	
Regular List.....	dis 70&10 3 70&10&10 3
Diston's.....	dis 45&10 3
Pocket Levels.....	dis 70&10 3 70&10&10 3
Davis' Iron Levels.....	dis 30 3
Davis' Inclinometers.....	dis 10&10 3

Poppers, Corn.	
Round or Square, 3 qt.....	gro \$10.50 3 12
Round or Square, 2 qt.....	gro \$25.50 3 24
Post Hole and Tree Augers and Diggers.	
Samson Post Hole Digger.....	doz \$38.00, dis 25 3 1
Fletcher Post Hole Augers.....	doz \$38.00, dis 25 3 1
Eureka Diggers.....	doz \$10 3 17
Kyan's Post Hole Auger, per doz.....	\$24.00, dis 40 3
Vaughan's Post Hole Auger.....	doz \$18.00
Kohler's Hercules.....	doz \$16.00
Kohler's New Champion.....	doz \$9.00
Schneider.....	doz \$18
Kyan's Post Hole Diggers.....	doz \$24
Cronk's Post Hole Digger.....	doz \$20, dis 50&10 3
Gibb's Post Hole Digger.....	doz \$30, dis 40 3 40 3 10 3

Potato Parers.	
White Mountain.....	doz \$5.00 3 5.50
Antrim Combination.....	doz \$8.00
Hoosier.....	doz \$13.50

Pruning Hooks and Shears.	
Diston's Combined Pruning Hook and Saw.....	doz \$18.00
Diston's Pruning Hook.....	doz \$12.00, dis 40 3 10 3
E. S. Lee & Co's Pruning Tools.....	dis 40 3
Pruning Shears, Henry Pat.....	doz \$5 75 3 4.00 net
Henry's Pruning Shears.....	doz \$4.25 3 4.50 net
Wheeler, M. & Co's Combination.....	doz \$12, dis 20 3
Dunlap's Saw and Chisel.....	doz \$5.50, dis 30 3
J. Wallington & Co.....	No. 1, \$5.25; No. 2, \$7.25

Pulleys. —Hot House, Awning, etc.....	dis 60&10 3
Japanese Screw.....	dis 60&10 3
Brass Screw.....	dis 60&10 3
Japanese Side.....	dis 60&10 3
Japanese Clothes Line.....	dis 60&10 3
Empire Sash Pulley.....	dis 55 3 60 3

Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50.....	dis 50 3
Hay Fork, "Anti Friction," 5 in. Solid, \$5.70.....	dis 50 3
Hay Fork, "F" Common and Pat. Bushed.....	dis 30 3
Hay Fork, Tarbox Pat. Iron.....	dis 30 3
Hay Fork, Reed's Self Lubricating.....	dis 80 3
Snake Rack.....	dis 45 3

Pumps. —Cistern, Best Makers.....	dis 50 3 10&10 3
Pitcher Spout, Best Makers.....	dis 60&10 3 60&10&10 3
Pitcher Spout, Cheaper Goods.....	dis 70&10 3 70&10&10 3

Punches.	
Saddlers' or Drive, good quality.....	doz 60 3 65 3
Bemis & Call Co's Cast Steel Drive.....	dis 50&10 3
Bemis & Call Co's Springfield Socket.....	dis 50&10 3
Springfield Socket.....	doz \$2.50 3 2.50
Springfield Socket.....	dis 15 3
Bemis & Call Co's Spring and Check.....	dis 40 3
Solid Timmers.....	doz \$1.44, dis 55 3
Timmers' Hollow Punches.....	dis 50&10 3

Rail.	
Sliding Door, Wrt. Brass.....	dis 25 3 25 3 10 3 25 3
Sliding Door, Bronzed Wrt. Iron.....	foot 7 3
Sliding Door, Painted.....	foot 4 3 20&10&10 3
Hard Door, Light.....	dis 10 3
Per 100 feet.....	\$2.50 3.00 4.40—dis 10 3
B. D. for N. E. Hangers.....	Small Med. Large
Per 100 feet.....	\$2.15 2.70 3.35 net

Rail.	
Ferry's Wrought Iron, foot.....	dis 50 3 50 3
Victor track Rail 7 1/2 foot.....	dis 50 3 50 3
Carri. 1 Steel Rail, per foot.....	dis 4 3 4 3

Rails.	
Cast Iron.....	dis 70 3 70 3
Wall Iron.....	dis 70 3 70 3
Gibbs' Lawn Rake.....	dis 12 3 40 3
Canton Lawn Rake.....	dis 12 3 40 3
Port Madison Prize Row Brace and Peetees.....	dis 65 3 5
Port Madison Steel Tooth Lawn Rake, \$5.....	dis 20 3

Razors. —J. R. Torrey Razor Co.....	dis 20 3
Wostenholme and Butcher.....	\$10 to 2, dis 10 3

Razors.	
Genuine Emerson.....	dis 60 3 60&10 3
Imitation Emerson.....	dis 60&10 3 60&10 3
Torrey's.....	dis 20 3
Badger's Belt and Combination.....	dis 20 3
Lamont Combination.....	dis 20 3

Rivets and Burrs.	
Iron, list November 17, 1887.....	dis 50 3
Rivet Nuts.	dis 50&10 3 50&10 3
Rods. —Steel, Brass.....	dis 20&10 3 20&10 3
Star Black Walnut.....	doz 40 3

Syracuse Screw-Drivers Bits.....dis 30 & 30 1/2
Screw Driver Bits.....dis 50 & 50 1/2
Screw Driver Bits, Parr's.....dis 50 & 50 1/2
Farr's Hot, Hild. Sets, No. 3, 112.....dis 50 & 50 1/2
F. D. & Co.'s, all Steel.....dis 50 & 50 1/2

Screws
Wood Screws—List, Brass, Jan. 27; Iron, July 1, 1887
Flat Head Iron.....dis 70
Round Head Iron.....dis 65
Flat Head Brass.....dis 65
Round Head Brass.....dis 60
Flat Head Bronze.....dis 65
Round Head Bronze.....dis 60

Machines
Flat Head, Iron.....dis 55
Round Head, Iron.....dis 50

Bench and Hand
Bench, Iron.....dis 55 & 10 @ 55 & 10 1/2
Bench, Wood, Bench.....dis 25
Bench, Wood, Hickory.....dis 20 & 10
Hand, Wood.....dis 25 & 10 @ 25 & 10 1/2
Las, Hunt Point.....dis 70
Coen and Lag, Hunt Point.....dis 60 & 10 @ 60 & 10 1/2
Hand Rail, Sargent.....dis 75
Hand Rail, Humason, Beckley & Co.'s.....dis 70 & 10 @ 70 & 10 1/2
Hand Rail, Am. Screw Co.....dis 75
Jack Screws, Millers Falls List.....dis 50 @ 50 & 10
Jack Screws, P. & W.....dis 55
Jack Screws, Sargent.....dis 60 & 10 @ 60 & 10 1/2
Jack Screws, Stearns.....dis 40 @ 40 & 10

Scroll Saws
Lester, complete, \$10.00.....dis 25
Rogers, complete, \$4.00.....dis 25

Scythe Souths.....dis 50 & 10

Shears
American (Cast) Iron.....dis 75 & 10 @ 75 & 10 1/2
Pruning.....See Pruning Hooks and Shears
Bernard's Lamp Trimmers.....dis 20 & 10
Timmers.....dis 20 & 10
Seymour's List, Dec. 1881, dis 60 & 10 @ 60 & 10 1/2
Heinrich's List, Dec. 1881, dis 60 & 10 @ 60 & 10 1/2
Heinrich's Tailor's Shears.....dis 35
First quality C. S. Trimmers, dis 80 & 10 @ 80 & 10 1/2
Second quality C. S. Trimmers, dis 80 & 10 @ 80 & 10 1/2
Acme Cast Shears.....dis 10 & 10
Diamond Cast Shears.....dis 10 & 10
Clippers.....dis 10 & 10
Victor Cast Shears.....dis 75 & 10 @ 75 & 10 1/2
Howe Bros. & Hulbert, Solid Forged Steel.....dis 70
Cleveland Machine Co., Solid Steel Forged.....dis 70

Sliding Door
M. W. & Co., list Jan. 1, 1887.....dis 60 & 10 @ 60 & 10 1/2
R. & E. list Dec. 18, 1885.....dis 55 & 10
Corbin's list.....dis 60 & 10 @ 60 & 10 1/2
Patent Roller.....dis 60 & 10 @ 60 & 10 1/2
Patent Roller, Hatfield's.....dis 75
Russell's Anti-Friction, list Dec. 18, 1885, dis 60 & 10
Moore's Anti-Friction.....dis 60

Sliding Sauter
R. & E. list Dec. 18, 1885.....dis 60 & 10 @ 60 & 10 1/2
Sargent's list.....dis 60 & 10 @ 60 & 10 1/2
Reading list.....dis 60 & 10 @ 60 & 10 1/2

Ship Tools
L. & J. White.....dis 20 & 10
Albertson Mfg. Co.....dis 25

Shoes, Horse, Mule, &c.

Horse
Burden's, Perkins', Phoenix, at factory.....\$4.00
Mule—Add \$1 keg to above prices.

Oz. Wrought
Ton lots.....dis 100
1000 lbs. lots.....dis 95
500 lbs. lots.....dis 100

Shot—(Eastern prices, 2¢ off, cash, 5 days.)
Drop, 1/2 bag, 25 lb.....\$1.50
Drop, 1/2 bag, 5 lb......35
Buck and Chilled, 1/2 bag, 25 lb.....\$1.75
Buck and Chilled, 1/2 bag, 5 lb......40

Shovels and Spades

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....dis 20
NOTE—Jobsbers frequently give 5 @ 7 1/2 % extra on above.
Griffith's Black Iron.....dis 50 & 10
Griffith's C. S.....dis 60 @ 60 & 10
Griffith's Solid Cast Steel R. R. Woods.....dis 20
Old Colton (Sanford Fork & Tool Co.).....dis 20
St. Louis Shovel Co.....dis 15 @ 15 & 7 1/2
Hussey, Binns & Co.....dis 15 @ 15 & 2 1/2
Hubbard & Co.....dis 20 @ 20 & 7 1/2
Lehigh Mfg. Co.....dis 60 & 10
Payne Pettibone & Son, list January, 1886.....dis 30
Remington's (Lowman's) Patent.....dis 30 & 10 @ 40
Rowland's Black Iron.....dis 60 & 10
Rowland's Steel.....dis 60 & 10 @ 60 & 10 1/2

Shovels and Tongs

Iron Head.....dis 60 & 10 @ 60 & 10 1/2
Brass Head.....dis 60 & 10 @ 60 & 10 1/2

Skains, Thimble

Western list.....dis 75 & 10 @ 75 & 10 1/2
Columbus Wrt. Steel, list Nov. 1, 1887.....dis 20
Coldbrook date Iron Co.....dis 50 & 10

Sieves

Buffalo Metallic, S. S. & Co., new list.....dis 50 & 25 @ 50 & 10
Barier Flour Sifters.....dis 20 & 10
Smith's Adjustable Sifters.....dis 25
Smith's Adjustable Milk Strainer.....dis 20
Smith's Adjustable F. & C. Strainer.....dis 17 1/2

Sieves, Wooden

Mesh 18, Nested, 700.....90
Mesh 20, Nested, 700.....85
Mesh 24, Nested, 700.....80

Slates—School, by case.....dis 50 & 10

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.).....dis 65
Pitch's (Bristol).....dis 60 & 10
Hotchkiss.....dis 10
Andrews.....dis 50
Sargent's Patent Guarded.....dis 70 & 10 @ 70 & 10 1/2
German, new list.....dis 40 & 10
Cover, New Patent.....dis 50 & 10
Cover, New E. E.....dis 60 & 10
Covered Spring.....dis 60 & 10 @ 60 & 10 1/2

Soldering Irons

Covert's Adjustable, list Jan. 1, 1887.....dis 35 & 25

Spoke Shavers—Iron.....dis 45
Wood.....dis 30
Bailey's (Stanley R. & L. Co.).....dis 40 & 10
Stearns.....dis 20 & 10 @ 30

Spoke Trimmers

Booney's.....dis 10.00, dis 50 & 10
Stearns' No. 1, \$15.00; No. 2, \$15.00; No. 3, \$15.00; No. 4, \$15.00; No. 5, \$15.00; No. 6, \$15.00; No. 7, \$15.00; No. 8, \$15.00; No. 9, \$15.00; No. 10, \$15.00; No. 11, \$15.00; No. 12, \$15.00; No. 13, \$15.00; No. 14, \$15.00; No. 15, \$15.00; No. 16, \$15.00; No. 17, \$15.00; No. 18, \$15.00; No. 19, \$15.00; No. 20, \$15.00; No. 21, \$15.00; No. 22, \$15.00; No. 23, \$15.00; No. 24, \$15.00; No. 25, \$15.00; No. 26, \$15.00; No. 27, \$15.00; No. 28, \$15.00; No. 29, \$15.00; No. 30, \$15.00; No. 31, \$15.00; No. 32, \$15.00; No. 33, \$15.00; No. 34, \$15.00; No. 35, \$15.00; No. 36, \$15.00; No. 37, \$15.00; No. 38, \$15.00; No. 39, \$15.00; No. 40, \$15.00; No. 41, \$15.00; No. 42, \$15.00; No. 43, \$15.00; No. 44, \$15.00; No. 45, \$15.00; No. 46, \$15.00; No. 47, \$15.00; No. 48, \$15.00; No. 49, \$15.00; No. 50, \$15.00; No. 51, \$15.00; No. 52, \$15.00; No. 53, \$15.00; No. 54, \$15.00; No. 55, \$15.00; No. 56, \$15.00; No. 57, \$15.00; No. 58, \$15.00; No. 59, \$15.00; 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CURRENT METAL PRICES.

APRIL 18, 1888.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
3/4 to 2 in. round and square...	2.00 @ 2.10¢
1 to 6 in. x 3/4 to 1 in.	
Refined Iron:	
3/4 to 2 in. round and square...	2.20 @ 2.30¢
1 to 4 in. x 3/4 to 1 1/2 in.	
4 1/2 to 6 in. x 3/4 to 1 in.	
1 to 6 in. x 1 1/2 and 5-16	2.40 @ 2.50¢
Rods—5/8 and 1 1/2 round and sq.	2.30 @ 2.40¢
Bands—1 to 6 x 3-16 to No. 12	2.40 @ 2.50¢
"Hurdle Best" Iron, base price.	3.00 @ ...¢
Bureau's "H. B. & S." Iron, base price.	2.80 @ ...¢
"Ulster"	3.10 @ ...¢
Norway Rods	4.00 @ 5.00¢

Merchant Steel from Store.

Open-hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.	3.50¢ @ 3¢
Best Cast Steel base price in small lots 9¢ @ 10¢	
Best Cast Steel Machinery, base price in small lots.	3.50¢ @ 6¢

Extras on Merchant Steel.

For classification and extras adopted by the Merchant Steel Association of the United States January 11, 1888, see *The Iron Age*, Feb. 23, 1888.

Sheet Iron from Store.

Common American. R. G. Cleaned.	
10 to 16	2.75 @ 2.80¢
17 to 20	2.85 @ 3.00¢
21 to 24	3.00 @ 3.10¢
25 and 26	3.20 @ 3.30¢
27	3.375 @ 4.00¢
28	3.50 @ 4.00¢
Galvanized, 14 to 20	4.80¢ @ 4.50¢
Galvanized, 21 to 24	5.20¢ @ 4.875¢
Galvanized, 25 to 26	5.60¢ @ 5.25¢
Galvanized, 27	6.00¢ @ 5.625¢
Galvanized 28	6.40¢ @ 6.00¢
Patent Planchet	A 10¢ B 9¢
Russia	9 1/2¢ @ 10¢
American Cold Rolled B. B.	5¢ @ 7¢

English Steel from Store.

Best Cast	15¢
Extra Cast	16 1/2¢
Swaged, Cast	16¢
Best Double Shear	15¢
Blister, 1st quality	12 1/2¢
German Steel, Best	10¢
2d quality	9¢
3d quality	8¢
Sheet Cast Steel, 1st quality	15¢
2d quality	14¢
3d quality	12 1/2¢

METALS.

Tin.

Banca, Pigs	38 @ 38 1/2¢
Straits, Pigs	38 @ 38¢
English, Pigs	37¢
Straits in Bars	39 @ 40¢

Tin Plates.

Charcoal Plates.—Bright. Per box.	
Melyn Grade. IC, 10 x 14	\$6.50
" " IC, 12 x 12	6.75
" " IC, 14 x 20	6.50
" " IC, 20 x 28	13.00
" " IX, 10 x 14	8.00
" " IX, 12 x 12	8.25
" " IX, 14 x 20	8.00
" " IX, 20 x 28	13.00
" " DC, 12 1/2 x 17	6.00
" " DX, 12 1/2 x 17	7.50
Calland Grade. IC, 10 x 14	6.10
" " IC, 12 x 12	6.25
" " IC, 14 x 20	6.00
" " IX, 10 x 14	7.50
" " IX, 12 x 12	7.75
" " IX, 14 x 20	7.50
Atlaway Grade. IC, 10 x 14	\$5.25 @ 5.50
" " IC, 12 x 12	5.50 @ 5.75
" " IC, 14 x 20	5.25 @ 5.50
" " IX, 10 x 14	10.75 @ 11.00
" " IX, 12 x 12	6.25 @ 6.50
" " IX, 14 x 20	6.50 @ 6.75
" " DC, 12 1/2 x 17	5.00 @ 5.25
" " DX, 12 1/2 x 17	6.00 @ 6.25

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	\$4.90 @ \$5.10
" " 10 x 20	7.50 @ 8.00
" " 20 x 28	10.00 @ 10.25
IX, 10 x 14, 14 x 20	4.90 @ 5.00

Charcoal Plates.—Tenne.

Dean Grade.—IC, 14 x 20	\$4.07 1/2 @ \$4.75
" " 20 x 28	9.25 @ 9.50
" " IX, 14 x 20	5.67 1/2 @ 5.75
" " 20 x 28	11.37 1/2 @ 11.50
Abecarne Grade.—IC, 14 x 20	4.50 @ 4.75
" " 20 x 28	9.00 @ 9.25
" " IX, 14 x 20	5.50 @ 5.75
" " 20 x 28	11.00

Tin Boiler Plates.

1XX, 14 x 20	112 sheets @ \$12.50 @ \$12.75
1XX, 14 x 28	112 sheets @ 12.75 @ 13.00
1XX, 14 x 31	112 sheets @ 12.45 @ 14.50

Copper.

Duty: Pig. Bar and Ingot, 4¢; Old Copper, 3¢ 1/2 lb. Manufactured (including all articles of which Copper is a component of chief value), 15¢ ad valorem.

Lake	17¢ @ 17.50¢
"Anchor" Brand	16¢ @ 16.50¢

Sheet and Brit Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	27	28	31	33	
30		72	25	25	25	28	30	34		
36	96		25	25	25	29	31	35		
36		96	25	25	25	28	30	34	38	
48	96		25	25	27	29	31	35		
48		96	25	25	28	30	32	36		
60	96		25	25	30	32	37			
60		96	25	25	31					
84	96		27	28						
84		96	27	28						
Over 84 in. wide			28	30						

All Bath Tub Sheets. 16 oz. 14 oz. 12 oz. 10 oz. Per pound. \$0.28 0.33 0.32 0.35

Bolt Copper, 3/4 inch diameter and over, per pound. 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles over 60 inches diameter, up to 96 inches diameter inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier. 28¢
12 ounce and up to 14 ounce to square foot. 29¢
10 ounce and up to 12 ounce. 31¢
Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each. 8¢
Tinning sheets on one side, 30 x 60 each. 8¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each. 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each. 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each. 10¢
Tinning sheets on one side, other sizes, per square foot. 25¢
For tinning both sides double the above prices.

Brass and Copper Tubes.

Seamless Copper.		Seamless Brass.	
3/4 inch 1/2 lb.	50¢	3/4 inch 1/2 lb.	47¢
1/2 inch 1/2 lb.	44¢	1/2 inch 1/2 lb.	41¢
1/4 inch 1/2 lb.	42¢	1/4 inch 1/2 lb.	39¢
3/8 inch 1/2 lb.	40¢	3/8 inch 1/2 lb.	37¢
1/2 inch 1/2 lb.	38¢	1/2 inch 1/2 lb.	35¢
3/4 inch 1/2 lb.	37¢	3/4 inch 1/2 lb.	34¢
1 inch 1/2 lb.	34¢	1 inch 1/2 lb.	31¢

Roll and Sheet Brass.

Discount from list. 10 @ 15%

Spelter.

Duty: Pig. Bars and Plates, \$1.50 @ 1.00 lb.
Western Spelter. 6 1/2¢ @ 6¢
"Berg-nport" 8 1/2¢ || "Bertha" | 7 1/2¢ @ 8¢ |

Zinc.

Duty: Sheet, 2 1/2¢ @ 2 lb.
600 lb casks 6 1/2¢ || Per lb. | 7 @ 7 1/2¢ |

Lead.

Duty: Pig. \$2 @ 100 lb. Old Lead. 2¢ @ lb. Pipe and Sheets, 3¢ @ lb.
American 5 1/2¢ || Newark | 5 1/2¢ |
Bar	5 1/2¢
Pipe	1 1/2¢, dia 20 x
Tin-Lined Pipe	1 1/2¢, dia 20 x
Roca Tin Pipes	5¢, dia 30 x
Sheet	8 1/2¢, dia 30 x

Soldier.

1/2 @ 1/2 (Guaranteed) 23¢ || Extra Wiping | 50¢ |
| The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition. | |

Antimony.

Cookson 17¢ || Hallett's | 12¢ |

Plumbers' Brass Work.

Revised discounts. See Trade Report.

Steam and Gas Fitters' Brass and Iron Work.

Revised discounts. See Trade Report.

Miscellaneous.

Cast Iron Fittings	Discount per cent. 70 & 10 & 2
Plugs and Bushings	75 & 10 & 2
Malleable Iron Unions	67 1/2 & 2
Malleable Iron Fittings	25

FRENCH GLASS.

January 20, 1887.—Per Box 50 feet.

Sizes.	Single.			
	1st.	2d.	3d.	4th.
	EFH	IEH	HH	HB
25 6 x 8 to 10 x 15	\$10.50	\$9.00	\$8.50	\$8.00
40 11 x 14 to 16 x 24	11.50	10.75	10.25	9.75
50 18 x 22 to 20 x 30	15.50	14.00	13.00	12.50
54 15 x 36 to 24 x 30	16.50	15.00	13.50	
60 26 x 28 to 24 x 36	17.75	16.25	14.75	
70 26 x 36 to 26 x 44	19.00	17.50	15.25	
80 26 x 46 to 30 x 50	21.00	19.50	17.00	
84 30 x 52 to 30 x 54	22.00	20.25	18.00	
90 30 x 56 to 34 x 56	23.00	21.25	19.00	
94 34 x 58 to 34 x 60	24.00	22.75	21.00	
100 36 x 60 to 40 x 60	26.50	24.50	23.00	

Double.

Sizes.	Double.			
	1st.	2d.	3d.	4th.
	EFH	IEH	HH	HB
25 6 x 8 to 10 x 15	\$13.00	\$12.50	\$12.00	\$11.50
40 11 x 14 to 16 x 24	16.00	15.00	14.50	
50 18 x 22 to 20 x 30	20.50	19.50	18.50	
54 15 x 36 to 24 x 30	21.00	20.75	19.50	
60 26 x 28 to 24 x 36	22.50	23.00	21.50	
70 26 x 36 to 26 x 44	26.00	25.00	23.00	
80 26 x 46 to 30 x 50	28.00	26.50	24.50	
84 30 x 52 to 30 x 54	30.00	28.00	26.00	
90 30 x 56 to 34 x 56	31.00	30.00	28.00	
94 34 x 58 to 34 x 60	32.50	31.00	29.00	
100 36 x 60 to 40 x 60	36.00	32.50	32.00	

Sizes above—\$15 per box extra for every 5 inches Discount—70 & 10 & 5 %.

AMERICAN GLASS.

Price Per Box of 50 Feet.

United Inches.	Sizes.	Single.			
		AA	A	B	C
25	6 x 8 to 10 x 15...	\$10.50	\$9.00	\$8.50	\$8.00
40	11 x 14 to 16 x 24...	11.50	10.75	10.25	9.75
50	18 x 22 to 20 x 30...	15.5	14.00	13.00	12.50
54	15 x 36 to 24 x 30...	16.50	15.00	13.50	...
60	26 x 28 to 24 x 36...	17.75	16.25	14.75	...
70	26 x 36 to 26 x 44...	19.00	17.50	15.25	...
80	26 x 46 to 30 x 50...	21.00	19.50	17.00	...
84	30 x 52 to 30 x 54...	22.00	20.25	18.00	...
90	30 x 56 to 34 x 56...	23.00	21.25	19.00	...
94	34 x 58 to 34 x 60...	24.00	22.75	21.00	...
100	36 x 60 to 40 x 60...	26.50	24.50	23.00	...

Double.

United Inches.	Sizes.	Double.			
		AA	A	B	C
25	6 x 8 to 10 x 15...	\$13.00	\$12.50	11.00	\$10.00
40	11 x 14 to 16 x 24...	16.00	15 00	13.50	12.00
50	18 x 22 to 20 x 30...	20.50	19.50	18.00	...
54	15 x 39 to 24 x 30...	22 00	20.75	19.75	...
60	26 x 28 to 24 x 36...	25.00	23.00	21.00	...
70	26 x 36 to 26 x 44...	26.00	25.00	22.50	...
80	26 x 46 to 30 x 50...	28.00	26.50	23.75	...
84	30 x 52 to 30 x 54...	30.00	28.00	25.25	...
90	30 x 56 to 34 x 56...	31.00	30.00	27.00	...
94	34 x 58 to 34 x 60...	32.50	31.00	28.00	...
100	36 x 60 to 40 x 60...	36.00	33.50	30.00	...

Sizes above—\$10 per box extra for every 5 inches. Discount—75 & 10 %, first bracket; 75, 10 & 5 % below first bracket.

Paints.

Black, Lamp—Coach Painters'...	22 @ 24	24
Ordinary	15 @ 25	25
Black, Ivory Drop, fair	12 @ 15	15
best	20	20
Black Paint in oil	4 egs, 8¢; assorted cans,	11
Blue, Prussian, fair to best	40 @ 55	55
in oil	45 @ 55	55
Chinese dry	70	70
Ultramarine	18 @ 30	30
Brown, Spanish	14	14
Van Dyke	10 @ 12	12
Dryers Patent American, ass'd cans, 5¢;	kegs, 7	7
Green, Ch one	15 @ 25	25
Green, Chrome in oil	14 @ 18 @ 25	25
Green, Paris	good, 20¢; best, 25	25
Green, Paris in oil	good, 30¢; best, 35	35
Iron, as is Bright Red	10 @ 24	24
Iron Paint, Brown	10 @ 14	14
Iron Paint, Purple	10 @ 14	14
Iron Paint, Ground in oil, Bright Red	10 @ 14	14
Iron Paint, Ground in oil, Red	10 @ 14	14
Iron Paint, Gr and in oil, Brown	10 @ 14	14
Iron Paint, Ground, Purple	10 @ 14	14
Litharge	6	6
Mineral Paints	2 @ 4	4
Orange Mineral	10	10
Red Lead, American	6	6
Red Venetian (Eng.) dry	\$1.65 @ \$1.75	\$1.75
Red Venetian in oil	as t'd cans, 11¢; kegs, 8	8
Red Indian Dry	9 @ 12	12
Rose Pink	10 @ 12	12